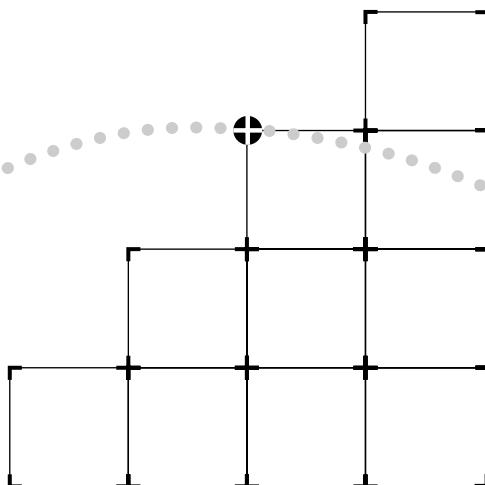




CS/3000 SERIES COMMUNICATIONS SERVER INSTALLATION GUIDE

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Classes

Various national agencies (in the United States, The Federal Communications Commission (FCC) govern the levels of electromagnetic emissions from digital devices. Electromagnetic emissions can interfere with radio and television transmission. To reduce the risk of harmful interference these agencies have established requirements for manufacturers of digital devices

The manufacturer of a digital device must test and label a product to inform an end-user of the maximum emission level from the product when used in accordance with its instructions. The emission levels encountered are classified as Class A or Class B. A system that meets the Class A requirement can be marketed for use in an industrial or a commercial area. A system that meets the more stringent Class B requirement can be marketed for use in a residential area in addition to an industrial or a commercial area.

The end user is generally held responsible for ensuring that his system is suitable for its environment as stated in the above paragraph and bears the financial responsibility for correcting any harmful interference.

Modifications

Modifications or changes made to this device, and not approved by 3Com, may void the authority granted by the FCC, or other such agency, to operate this equipment.

Shielded Cables

Connections between 3Com equipment and other equipment and peripherals must be made using shielded cables in order to maintain compliance with FCC, and other agency, electromagnetic frequency emissions limits.

Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can create radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area can cause harmful interference in which case the user will be required to correct the interference at his own expense.

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- EN 50082-1 — Electromagnetic compatibility — generic immunity standard part 1: residential, commercial, and light industry.

A Declaration of Conformity detailing the above standards has been made and is on file at 3Com Corporation.

ABOUT THIS GUIDE

Introduction

This guide provides information on installing, configuring, troubleshooting, maintaining, and servicing the 3Com® CS/3000 series of communications servers.

The CS/3000 series consists of Models CS/3000 and CS/3100. These models are identical except that Model CS/3100 includes a diskette drive. All references in this guide to “CS/3000 series,” “communications server,” or “server,” without a specific model designation, apply to both models.

For information about using multiprotocol communications server software, refer to the *Multiprotocol Communications Server Operation Guide* and the *Multiprotocol Communications Server Reference Guide*.



If the information in the release notes shipped with your product differs from the information in this guide, follow the release notes.

Audience

This guide is intended for network administrators who have experience in planning, maintaining, and troubleshooting local area networks, and who will be responsible for configuring and managing communications servers.

Conventions

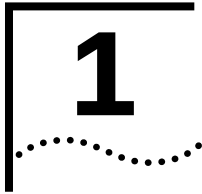
Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, equipment damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

Table 2 Text Conventions

Convention	Description
"Enter" vs. "Type"	"Enter" means to type something, then press the Return or Enter key. Do not press the Return or Enter key when an instruction says only "type."
"Syntax" vs. "Command"	The term "syntax" means the general form of a command that contains variables, such as a port, path, value, address, or string. You must supply values for the variables. For example, enable RIPIP by using the following syntax: <pre>SETDefault !<port> -RIPIP CONTROL = Listen</pre> You must supply a port number for <port>. The term "command" means that all values have been supplied and you can enter the command as shown. For example, remove the IP address by entering the following command: <pre>SETDefault !0 -IP NETaddr = 0.0.0.0</pre>  This guide uses upper- and lowercase letters to distinguish the full form of commands and command syntax from the abbreviated form. You can enter a command in abbreviated form by typing only the uppercase portion. It does not matter whether you type the command in upper- or lowercase letters.
Text represented as screen display	This <code>typeface</code> represents displays that appear on your terminal screen, for example: <pre>NetLogin:</pre>
Text represented as commands	This typeface represents commands that you enter, for example: <pre>SETDefault !0 -IP NETaddr = 0.0.0.0</pre>
Keys	This guide refers to named keys by their names, such as the Return key or the Escape key, or in brackets, such as [Return] or [Esc]. If you must press two or more keys simultaneously, the keys are linked with a plus sign (+), for example: Press [Ctrl]+[Alt]+[Del].
<i>Italics</i>	<i>Italics</i> denote new terms or emphasis.



OVERVIEW

CS/3000 series communications servers connect serial devices over a local area network (LAN). These products support most asynchronous terminals, hosts, printers, personal computers, modems, word processors, and other devices. All CS/3000 series models can be used as terminal servers or as combination host and terminal servers.

The CS/3000 series consists of Model CS/3000 and Model CS/3100. These models are identical except that Model CS/3100 includes a diskette drive.

Features

CS/3000 and CS/3100 communications servers offer the following features:

- **Modularity**

Modularity allows you to expand the number of serial ports in 16-port increments, to a maximum of 48 serial ports. Refer to “Configurations” for information on configurations available at purchase.

- Support for parallel printers with Centronics™ interfaces
- Optional Ethernet interface modules

Both models support optional single-port AUI (10BASE5) and RJ-45 (10BASE-T) Ethernet interface modules. You must buy and install these modules separately.

- 6 MB of memory (2 MB shared, 4 MB private)
- Multiple boot sources

Both models can boot either from a Sun™ SPARCsystem™ running 3Com Remote Boot and Configuration Services (RBCS) software version 2.0 or later in a SunOS™ version 4.1 or later environment or from a generic Trivial File Transfer Protocol/File Transfer Protocol (TFTP/FTP) server. Model CS/3100 can also boot from a local diskette.



Although some multiprotocol communications software packages include Network Control Server (NCS) software for backward compatibility, 3Com no longer provides technical support for NCS software or servers.

- User serviceability

The user can replace or add a 16-port asynchronous module, and replace the diskette drive (Model CS/3100 only), power supply, private memory chips, and EPROM.

Model CS/3000 has no diskette drive. This configuration is advantageous in environments where disk contamination is possible or where users are not allowed access to system software.

Model CS/3100 has a 3.5-inch internal diskette drive. This model can boot either over the network or locally from the internal diskette drive.

Configurations

CS/3000 series servers can be purchased in the following configurations:

- Three 16-port asynchronous modules (48 ports)
- No 16-port asynchronous modules

The no-module configuration allows you to install one, two, or three 16-port asynchronous modules (for 16, 32, or 48 ports) now or as your networking needs expand. For instructions on installing and cabling a 16-port asynchronous module, refer to Chapter 2, "Installation."

Regardless of the configuration you purchase, you must install one Ethernet interface module (single-port AUI or RJ-45). For instructions on installing and cabling an Ethernet interface module, refer to "Single-Port AUI Module".

Components

CS/3000 series servers consist of the following components:

- Chassis
- Cover
- Front panel
- Back panel
- One or more 16-port asynchronous modules (with cable strain relief brackets)

CS/3000 series servers can also include the following optional components:

- Ethernet interface modules
- Single-port AUI module (10BASE5)
- Single-port RJ-45 module (10BASE-T)
- Rack mount kit

Figure 1-1 shows front and rear views of Model CS/3100. (Model CS/3000 is similar, but does not have a diskette drive in the front panel.) The rear view shows three 16-port asynchronous modules and a single-port AUI module installed, but not cabled.

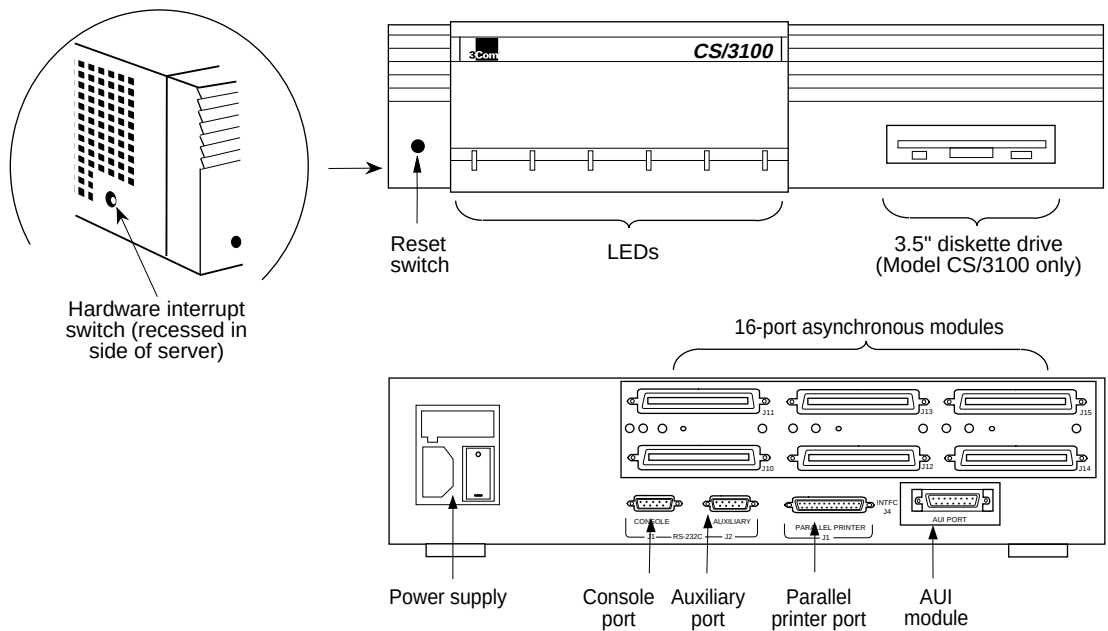


Figure 1-1 Front and Rear Views of Model CS/3100

The following sections describe the basic and optional components of the CS/3000 series servers in detail.

Chassis

The chassis houses the following components:

- Motherboard
- Auxiliary processor board
- Power supply module (including fan)
- 3.5-inch diskette drive (Model CS/3100 only)
- Hardware interrupt switch

Figure 1-2 shows the location of these components in a Model CS/3100 with its cover removed. (Model CS/3000 is identical except that it does not have a diskette drive.)

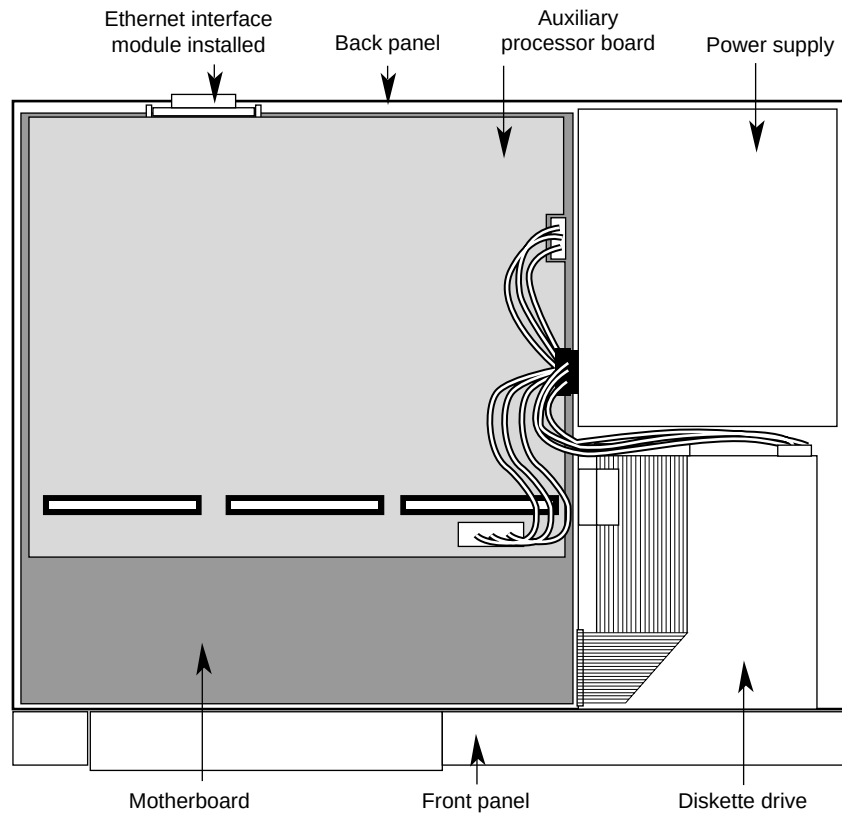


Figure 1-2 Model CS/3100 with Cover Removed

The following sections describe the motherboard, auxiliary processor board, and hardware interrupt switch. Refer to “CS/3100 Internal Diskette Drive” and “Power Supply Module” for more information on components shown in Figure 1-2.

Motherboard The motherboard is secured to the bottom of the chassis and includes the main processor for the server. Table 1-1 lists the main components on the motherboard and briefly describes their functions.

Table 1-1 Motherboard Components

Component	Function
Motorola® 68EC030 or equivalent processor	Operates at 20 MHz and functions as the server's main processor.
4 MB of private memory and 2 MB of shared memory	Private memory is intended for software code. Shared memory provides storage for packet data and control and status information used by the Ethernet controller. This arrangement provides better performance than single-memory-based servers.
Parallel printer connector	Provides the connection between the server and a parallel printer.
Console connector	Provides the connection between the server and a console.
Auxiliary connector	Reserved for internal 3Com use and not currently operational.
Ethernet interface module connector	Provides the connection between the server and an Ethernet interface module.
EEPROM	Contains configurable firmware parameters and commands to reboot or reset the server, make copies of the software distribution diskette, perform diagnostic tasks, and so on. These parameters and commands can be accessed via the monitor utility. For more information, refer to Appendix C, “Monitor Utility.”

Auxiliary Processor Board The auxiliary processor board is fastened on top of the motherboard and includes the main processor for the 16-port asynchronous modules. Table 1-2 lists the main components on the auxiliary processor board and briefly describes their functions.

Table 1-2 Auxiliary Processor Board Components

Component	Function
Motorola 68EC030 or equivalent processor	Operates at 20 MHz and functions as the processor for all 16-port asynchronous modules.
128 KB static RAM	Provides high performance with high-speed CPU access for program execution.
Three 16-port asynchronous module connectors	Provide the connection between the server and the asynchronous modules.

Hardware Interrupt Switch

The hardware interrupt switch is located on the server's left side (viewed from the front of the server) near the front, as shown in Figure 1-1 on page 1-3. The switch is recessed behind a small round hole. Pressing this switch generates a nonmaskable interrupt (NMI), aborting application software, disabling all ports except the console port, and passing control to the monitor utility. For information on the monitor utility, refer to Chapter 4, "Configuration," and Appendix C, "Monitor Utility."

If the server crashes or stops working entirely, you may need to use the hardware interrupt switch to reboot or to perform a memory dump. For information on memory dumps, refer to "Memory Dump Procedures".



WARNING: *Use only a nonconductive object such as a plastic stylus to press the hardware interrupt switch. Do not use the tip of a pencil. Graphite particles can cause electrical shock to the operator and can damage components on the server's circuit boards.*

Cover

The inverted U-shaped cover is secured by three screws on the bottom edge of each side of the chassis.

Both sides of the cover have vents. The vents on the left side (viewed from the front of the server) are for air intake. The vents on the right side are for air exhaust.

Front Panel

The front panel of the server includes the following:

- Six LEDs
- Reset switch
- Internal 3.5-inch diskette drive (Model CS/3100 only)

Figure 1-3 shows the front panel of Model CS/3100. Model CS/3000 is identical except for the diskette drive.

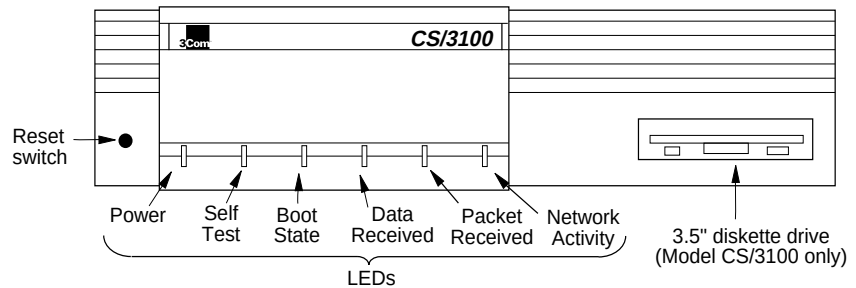


Figure 1-3 Front Panel of Model CS/3100

LEDs The six front-panel LED indicators display diagnostic and operational activity at power-on and while communications server software is running. Table 1-3 lists these front-panel LED indicators and their functions.

Table 1-3 Front-Panel LED Indicators

LED Name	Normal State	Function
Power	On	On when server is on and the power supply generates voltage on its +5 V DC output.
Self Test	Off	On for approximately two minutes following power-on or reset. Stays on if diagnostic tests fail. Flashes during operation to indicate no boot source or software failure.
Boot State	Off	On during software boot; turns off if boot is successful. Lights cyclically or remains on if boot source is not present or responding. Also indicates hardware failure during operation.
Data Received	Flashing	Flashes when the server detects data being received from an I/O port. Used to verify proper physical attachment of I/O devices.
Packet Received	Flashing	Flashes when the server detects a packet on the network with address field matching the server's address. Verifies that packets are being received by the server.
Network Activity	Flashing	Flashes when the server detects a packet on the network. The packet address need not match the server's address. Verifies proper physical attachment to the network cable and indicates network load.

Reset Switch The reset switch is located at the lower left corner of the front panel. It is recessed to protect it from being pressed unintentionally. Pressing the reset switch interrupts normal operation, reinitializes the server, begins the startup sequence, and purges server RAM in the same way as toggling the power switch. The Self Test LED lights as the server executes self-test diagnostics. The Boot State LED lights as the server boots from its software diskette or the network.

CS/3100 Internal Diskette Drive

Model CS/3100 includes a 3.5-inch, 135-tpi diskette drive located on the right side of the front panel. The drive can accommodate 2 MB unformatted capacity (1.44 MB formatted) diskettes. This drive is used for booting system software and for performing memory dumps following a server failure. The diskette is also used during operation to maintain software configuration information.

Back Panel

The CS/3000 and CS/3100 back panel, shown in Figure 1-4, includes the following components:

- Four slots
- Three for 16-port asynchronous modules
- One for an Ethernet interface module
- Console port
- Auxiliary port
- Parallel printer port
- Power supply module

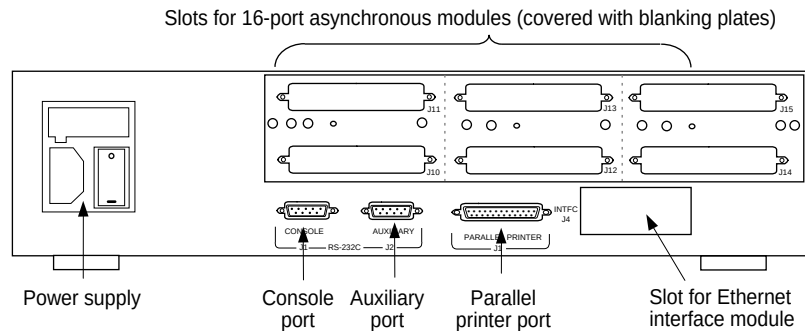


Figure 1-4 Back Panel of CS/3000 Series

The following sections describe these components.

Slots CS/3000 series servers have four slots in the back panel, three for 16-port asynchronous modules and one for an Ethernet interface module.

If you buy the CS/3000 series server without 16-port asynchronous modules, blanking plates cover the slots intended for these modules. These blanking plates are shown in Figure 1-4. For instructions on removing the blanking plates and installing and cabling the modules, refer to Chapter 2, “Installation.”

The Ethernet interface slot is not covered. For instructions on installing and cabling Ethernet modules, refer to Chapter 2, “Installation.”

Console and Auxiliary Ports

The console port allows you to attach a terminal that can be used to:

- Provide access to the server's user interface
- Modify firmware configuration
- Perform memory dumps

Console functions are useful for maintenance and repair (for instance, after a server crash). For information on attaching a console, refer to “Attaching a Console”.

The auxiliary port is reserved for internal 3Com use and is not operational.

The console and auxiliary ports are horizontally mounted male DB-9 RS-232 connectors. The RS-232 connector associated with these ports is based on the 9-pin IBM® PC AT® standard, and is configured as data terminal equipment (DTE). To connect a terminal or other DTE device, use a null modem cable. To connect a modem or other data communications equipment (DCE), use a modem cable.



CAUTION: *To eliminate cable noise emission in excess of FCC Part 5, and CISPR22 (EN55022) specifications for Class A devices, the console cable should be 100% shielded (Inmac® braid shielded or equivalent) and have connectors with metallic backshells. Cable shields should be connected to backshells.*

For information on the console port pin assignments and pin numbers, refer to Appendix A, “Pin Assignments.”

Parallel Printer Port

The printer interface port connects the server to parallel printers with Centronics printer interfaces. For information on cabling the server to the printer, refer to Chapter 2, “Installation.”

The cable between the server and the printer should not be more than 12 feet long, so you must locate your printer physically close to the server.

The printer connector is a female DB-25 equipped with jack posts. For wiring information, refer to Appendix A, “Pin Assignments.”

16-Port Asynchronous Modules

A 16-port asynchronous module consists of a board and a connector panel containing two horizontally mounted 50-pin female RJ-21 (Telco) connectors that support RS-232/RS-423 signals. Each serial connector contains 8 ports, for a total of 16 ports per module, or 48 ports for a communications server with the full complement of three modules. The ports are configured as DCE for attachment to DTE devices, such as terminals. The connectors adhere to the MOD-TAP® USOC 6 wiring standard.

Figure 1-5 shows the 16-port asynchronous module components.

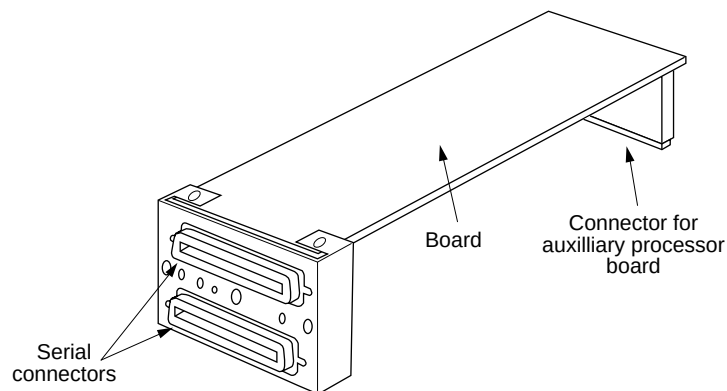


Figure 1-5 16-Port Asynchronous Module

Figure 1-5 also shows a connector mounted directly on the board. This connector mates with one of three connectors on the auxiliary processor board.

Each module allows you to attach up to 16 hosts, terminals, modems, or other asynchronous serial equipment. For instructions on installing and cabling modules, refer to “Installing 16-Port Asynchronous Modules”.

For information on the serial connector pin assignments, refer to Appendix A, “Pin Assignments.”

Cable Strain Relief

Each 16-port asynchronous module is shipped with a strain relief mechanism. This strain relief allows you to secure the connectors that fasten to your 16-port asynchronous modules.

The strain relief consists of a metal bracket that you secure between the two serial connectors of a 16-port asynchronous module. The long bar of the bracket holds the cable connectors in place.

Figure 1-6 shows the back panel of a CS/3000 series server with three 16-port asynchronous modules and cable strain relief mechanisms.

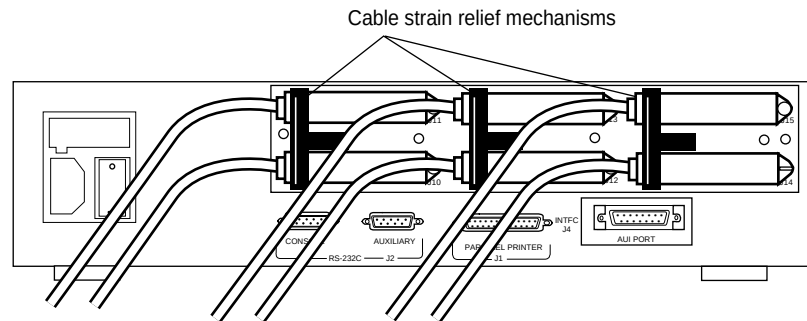


Figure 1-6 Strain Relief Mechanisms

For information on installing the cable strain relief, refer to Chapter 2, “Installation.”

Optional Ethernet Interface Modules

The following optional Ethernet interface modules are available for the CS/3000 series server:

- Single-port AUI module (10BASE5), 3Com part number 3C5622
- Single-port RJ-45 (10BASE-T), 3Com part number 3C5623

You must install one of these optional Ethernet interface modules in the back panel of the CS/3000 series server in order to operate on a network.



CAUTION: *Powering on the server without an Ethernet module can result in overheating. The warranty is void if this situation occurs.*

Single-Port AUI Module

The single-port AUI module connects to a thick or thin coaxial, twisted-pair, or fiber-optic network through an external transceiver. It consists of a board and a connector panel containing one AUI port.

The AUI port is a horizontally mounted female DB-15 connector. For wiring information, refer to Appendix A, “Pin Assignments.” Figure 1-7 shows the module’s components.

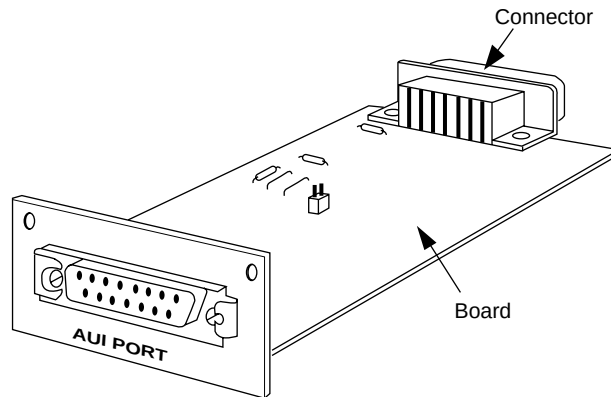


Figure 1-7 Single-Port AUI Module

Figure 1-7 also shows a connector mounted directly on the board. This connector mates with a connector on the motherboard.

For information on installing and cabling the single-port AUI module, refer to Chapter 2, “Installation.”

Single-Port RJ-45 Module

The single-port RJ-45 module connects directly to a twisted-pair network. It consists of a board and a panel containing an RJ-45 connector and three LEDs. The RJ-45 connector conforms to the IEEE 802.3 10BASE-T standard.

Figure 1-8 shows the module components. Table 1-4 lists each LED and its function.

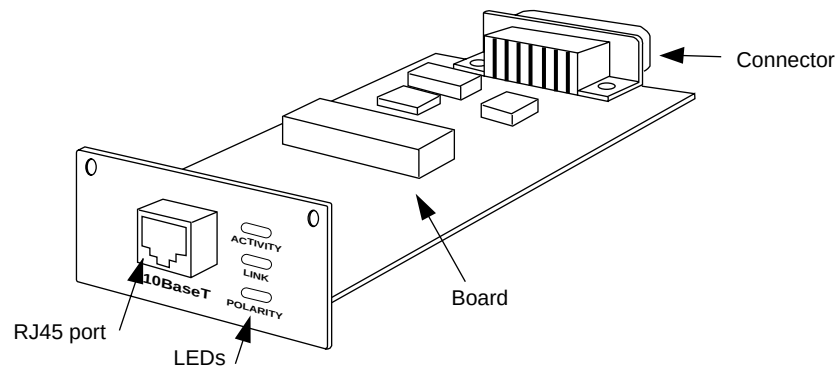


Figure 1-8 Single-Port RJ-45 Module

Table 1-4 Single-Port RJ-45 Module LEDs and Their Functions

LED Name	Normal State	Function
Activity	On continuously or flashing	On continuously or flashes when port is receiving or transmitting data. When traffic on the network segment is heavy, the LED is on continuously; when traffic is light, the LED flashes; when there is no traffic, the LED is off. The Network Activity LED on the front panel also indicates traffic on the network segment.
Link	On	On when a connection between the port and a workstation, hub, or repeater exists. Flashes if the connection exists but polarity of the cable is reversed. The module corrects automatically for polarity reversal.
Polarity	Off	Off when polarity is normal, on when polarity is reversed.

Figure 1-8 also shows a connector mounted directly on the board. This connector mates with a connector on the motherboard.

For information on how to install the single-port RJ-45 module in the server and cable it to a twisted-pair network, refer to Chapter 2, “Installation.”

Power Supply Module

The power supply module is located on the left side of the server’s back panel. It includes a power switch, fuseholder, and power cord receptacle, as shown in Figure 1-9. The switch is marked according to international I/O convention. When the I side is pressed, the switch is on; when the O side is pressed, the switch is off.

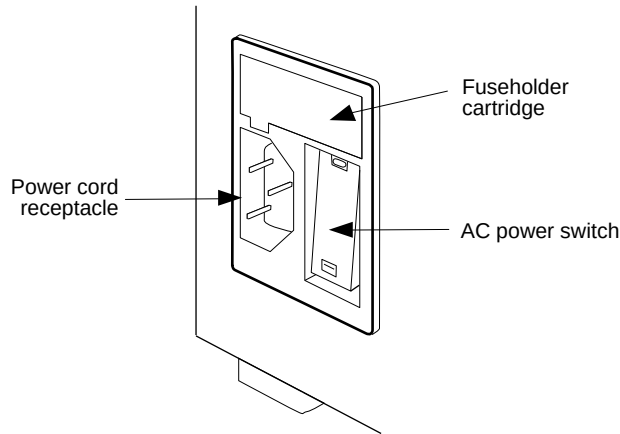


Figure 1-9 Switch-Fuseholder-Receptacle Assembly

The autoranging power supply automatically adjusts to the local power source. You do not have to select the appropriate voltage.

Cutouts in the power supply enclosure reveal a fan inside. The fan opening serves as an air exhaust vent.

The single fuse is mounted in a removable cartridge. Refer to Chapter 5, “Maintenance and Upgrades,” for information about changing fuses.

The international CEE-22 AC power cord receptacle is approved for 6 A operation. The connector has three prongs, with chassis ground on the middle prong. All servers are shipped with power cords. If your power cord does not match your requirements, contact your network supplier.

Optional Rack Mount Kit

An optional rack mount kit is available for CS/3000 series servers (3Com part number 3C759). This kit allows you to mount the server in a two- or four-pole 19-inch rack.

For information on how to install the server in a rack, refer to Chapter 2, “Installation.”

Specifications

Table 1-5 lists physical dimensions of CS/3000 series servers. The dimensions for Models CS/3000 and CS/3100 are the same except for weight (because of the diskette drive).

Table 1-5 Physical Dimensions

Width	Depth	Height	Weight* (CS/3000, CS/3100)
16.25 in. (41.67 cm)	12.75 in. (32.70 cm)	3.75 in. (9.62 cm)	15 lbs (6.8 kg), 17 lbs (7.7 kg)

* Including three 16-port asynchronous modules.

Table 1-6 and Table 1-7 list electrical requirements and environmental conditions recommended for safe, reliable operation.

Table 1-6 Electrical Requirements

Parameter	Requirement	Notes
Input voltage	115/230 V AC autoranging	47–63 Hz
Input voltage range	90–132 V AC or 180–264 V AC	Either voltage range accepted without user switching
Maximum current consumption	1.7 A at 115 V AC 0.83 A at 230 V AC	Fuse: 3 A, 250 V, fast-blow, 5 mm x 20 mm
Output power	86 W	
Maximum power dissipation	105 W	
(continued)		
Maximum power consumption	191 W	
Maximum heat dissipation	360 BTU/h	
Hold-up time	12 ms (after removal of nominal line voltage at full load)	

Table 1-7 Environmental Requirements

Parameter	Minimum	Maximum
Temperature		
Operating	41 °F (5 °C)	104 °F (40 °C)
Nonoperating	–4 °F (–20 °C)	140 °F (60 °C)
Altitude		
Operating	Sea level	15,000 ft (4,600 m)
Nonoperating	Sea level	40,000 ft at 32 °F (13,000 m at 0 °C)
Relative humidity		
Operating	20% noncondensing	80% noncondensing
Nonoperating	10% noncondensing	90% noncondensing

2

INSTALLATION

This chapter describes how to install your CS/3000 series server. Table 2-1 summarizes the steps in the order in which they should be performed and indicates whether each step is mandatory or optional.

Table 2-1 Installation Steps

Step	Status
Preparation	Mandatory
Installing 16-port asynchronous modules	Mandatory if none are installed; otherwise optional
Installing an Ethernet interface module	Mandatory
Mounting the server	Mandatory
Cabling 16-port asynchronous modules	Mandatory
Cabling the Ethernet interface module	Mandatory
Attaching a printer	Optional
Attaching a console	Mandatory
Attaching the power cable	Mandatory
Modifying the firmware configuration	Optional

Preparation

Do the following before beginning the installation:

- 1 Remove the communications server, any uninstalled 16-port asynchronous modules, the Ethernet interface module, and the power cable from their shipping cartons.

To avoid electrostatic discharge (ESD) related damage, keep the 16-port asynchronous and Ethernet interface modules in their antistatic shielded bags until you are ready to install them.



Refer to step 7 for additional ESD guidelines.

- 2 Verify that you have received all items on the packing list.
- 3 Inspect the server and modules for shipping damage.

If you find any damage, contact the shipping company to file a report. If you must return the server or modules to your network supplier or 3Com, ship them in their original shipping cartons and antistatic shielded bags. If the original carton was damaged in shipment, repack the hardware in a carton that provides equivalent protection.
- 4 Verify that the power specifications on the product identification label on the back panel correspond to the available power source.

If the available power source is not within the acceptable range, contact 3Com or your network supplier.
- 5 Write down the Ethernet address, part number, and serial number listed on the product identification label.
- 6 Collect the tools you need.

You need a #1 and a #2 Phillips screwdriver and a small slotted screwdriver.
- 7 Observe the following ESD guidelines when installing 16-port asynchronous modules and Ethernet interface modules:
 - a Do not touch pins, leads, or solder connections on the board.
 - b Handle the board by the edges only.
 - c Observe proper grounding techniques, including using a foot strap and grounded mat or wearing a grounded static discharge wrist strap.

The warranty does not cover failures resulting from ESD.

Installing 16-Port Asynchronous Modules

This procedure assumes that your communications server has no 16-port asynchronous modules installed, and you are installing the modules before turning on your server power for the first time. Instructions for cabling the modules are provided in “Cabling 16-Port Asynchronous Modules”. To replace or add a 16-port asynchronous module to a server with the power turned on, refer to Chapter 5, “Maintenance and Upgrades.”



CAUTION: Procedures that involve removing the server cover must be performed by service personnel only.

“Service personnel” means people who have appropriate technical training and experience. Service personnel are aware of possible hazards and of ways to minimize the danger to themselves and others.

You need a #1 and a #2 Phillips screwdriver. To install the 16-port asynchronous module, follow these steps:



WARNING: Before removing the cover, be sure the unit is turned off and the power cable is either unplugged from the unit or from the wall socket.

- 1 Remove the cover.
 - a Using the #1 Phillips screwdriver, remove the three black screws from each side of the cover.
 - b Grasp both sides of the cover and carefully lift it off.
- 2 Remove the upper portion of the back panel.

Using the #2 Phillips screwdriver, remove the two screws located at the outer edges of the upper portion. Then remove the panel as shown in Figure 2-1.

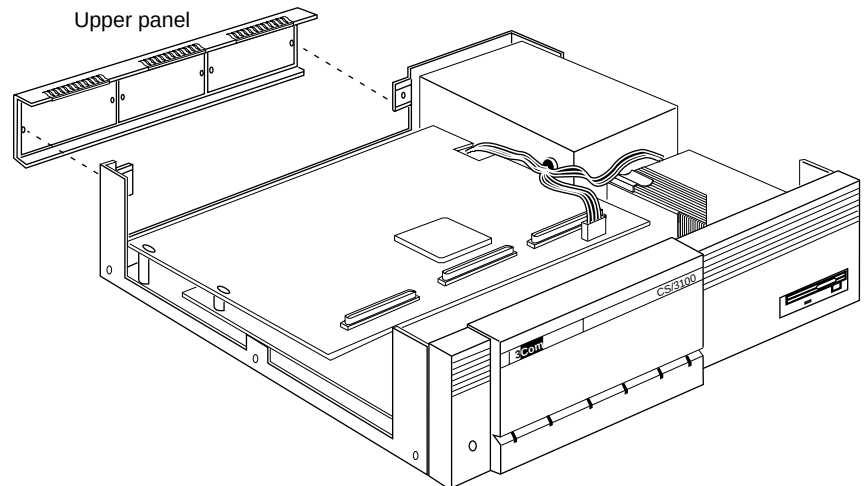


Figure 2-1 Removing Upper Portion of Back Panel

- 3 Remove one blanking plate for each 16-port asynchronous module you plan to install. If you are installing fewer than three modules, remove the blanking plate closest to the power supply first and the center blanking plate next.

There are three blanking plates. Each covers two horizontal slots for serial connectors. Unused slots require a blanking plate to maintain proper cooling of the server and regulatory compliance.



CAUTION: *Powering on the server without a blanking plate or module in each slot or without a cover can cause the server to overheat. The warranty is void if this occurs.*

Loosen the two screws that secure the blanking plate and remove the plate.

- 4 Fasten each 16-port asynchronous module to the upper portion of the back panel, as shown in Figure 2-2.

Two screws are provided for each module.

If you are installing fewer than three modules, install the first module in the slot closest to the power supply and the second module in the center slot.

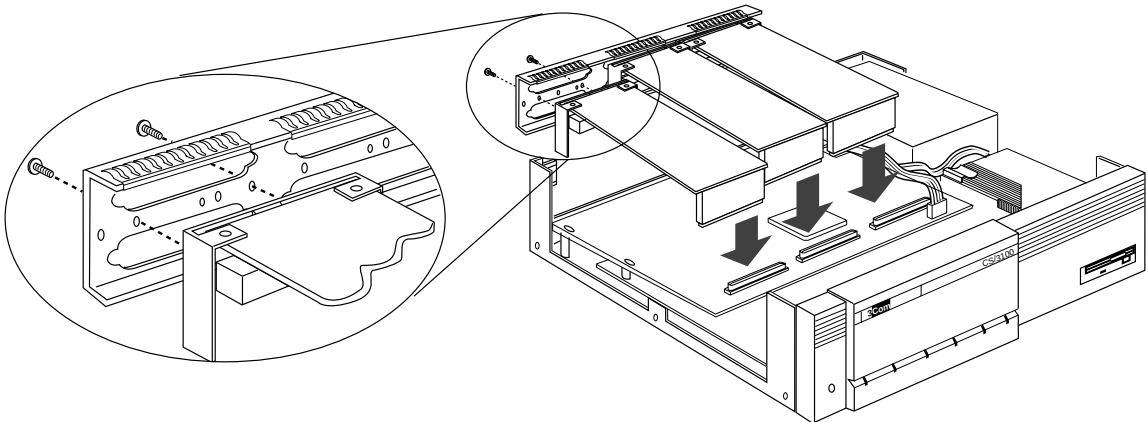


Figure 2-2 Installing 16-Port Asynchronous Module

- 5 Position the panel in place, then place the connector on the edge of each module over the corresponding connector on the auxiliary processor board and press down firmly.

To position the panel, latch the three integral hooks along the bottom of the panel over the edge of the chassis.

6 Fasten the panel with the two screws.

7 Replace the cover.



WARNING: *To avoid a fire hazard, always replace the cover. Operating the server without a cover can cause it to overheat and will void the warranty.*

a Place the cover on the chassis.

Make sure that the panel with the greater number of ventilation holes is positioned on the left side (viewed from the front of the server).

b Using the #1 Phillips screwdriver, replace and tighten the black screws on each side of the cover until snug. Do not overtighten.

If you intend to mount the server in a rack, replace the middle screw only. If you intend to use the server on a tabletop, replace all three screws.

To cable the 16-port asynchronous modules to a host, terminal, modem, or other serial equipment, refer to “Cabling 16-Port Asynchronous Modules”.

Installing Ethernet Interface Modules

This section describes the procedure for installing an Ethernet interface module. Instructions for cabling the modules are provided in “Cabling Ethernet Interface Modules”.



WARNING: *Be sure the unit is turned off and the power cable is either unplugged from the unit or from the wall socket.*

You need a #1 Phillips screwdriver. To install an Ethernet interface module, follow these steps:

1 Insert the Ethernet interface module into the slot.

a Hold the module with the component side up and the connector mounted on the edge of the board away from you.

b Slowly slide the module into the slot, being careful to align the board edges with the guide rails in the chassis, as shown in Figure 2-3.

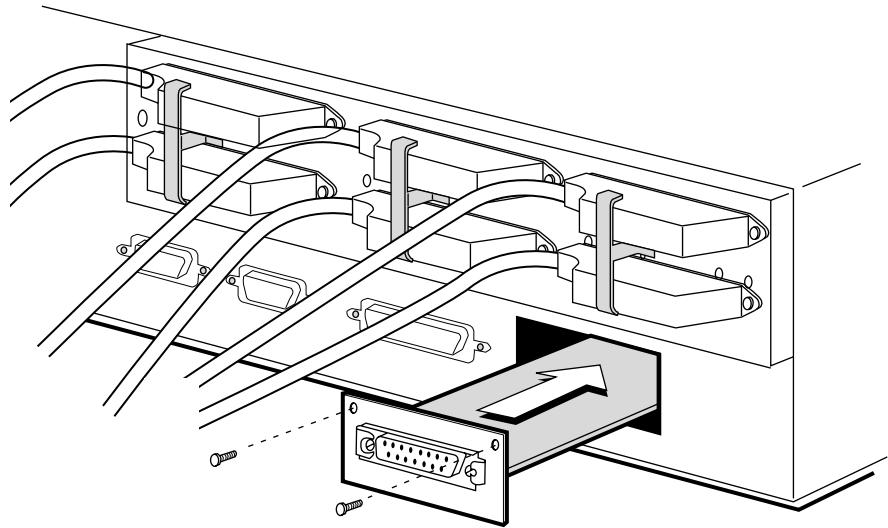


Figure 2-3 Installing the Ethernet Interface Module

- c** Continue to slide the module into the slot until you feel a slight resistance.

This resistance is caused by the connector on board engaging the connector on the motherboard.

- 2** Fasten the module into the chassis with the two screws.

Mounting the Server

You can mount a CS/3000 series server on a tabletop, in a two- or four-pole 19-inch rack, or vertically in a wall mount. It is usually easier to mount the server before attaching cables

Mounting on a Tabletop

To mount your server on a tabletop, use the following procedure:

- 1** Place the server on a firm, flat surface.
Do not mount the server at an angle greater than 15 degrees from the horizontal or vertical.
- 2** Make sure that the air intake and fan exhaust vents on the sides of the cover are not blocked.
Leave at least 5 inches (13 cm) of free space on both sides.

- 3 Make sure that the rear of the server is not against a wall or other obstruction.

Leave approximately 9 inches (23 cm) of free space at the rear of the server for cable clearance.

- 4 Do not stack objects on top of the server.

Mounting in a Rack

You can order an optional rack mounting kit with your server (3Com part number 3C759). This kit consists of two brackets, nuts, and screws that allow you to mount the server in a two- or four-pole 19-inch rack.

You need #1 and #2 Phillips screwdrivers to mount the server in the rack. You will probably need two people, one person to hold the server and the other to attach it to the rack.

- 1 Fasten a rack mount bracket on each side of the server.

Remove the two outer screws from the sides of the server with the #1 Phillips screwdriver. Using the #4-40 screws provided, fasten a bracket to each side of the server, as shown in Figure 2-4. Tighten each screw securely.



CAUTION: *If you use fewer than four screws (two on each side) to fasten the rack mount brackets to the sides of the server, the server can fall and sustain damage. This voids the warranty.*

- 2 Slip two spring-clip captive nuts over the holes of each rack pole where you plan to install the server (see Figure 2-4).

Make sure that the nut goes behind the pole.

- 3 Attach the server to the rack.

One person should hold the server between the poles of the rack, while the other attaches the server to the poles. Attach the server to the rack with the four #10-32 panhead screws using the #2 Phillips screwdriver, as shown in Figure 2-4. Tighten each screw securely.

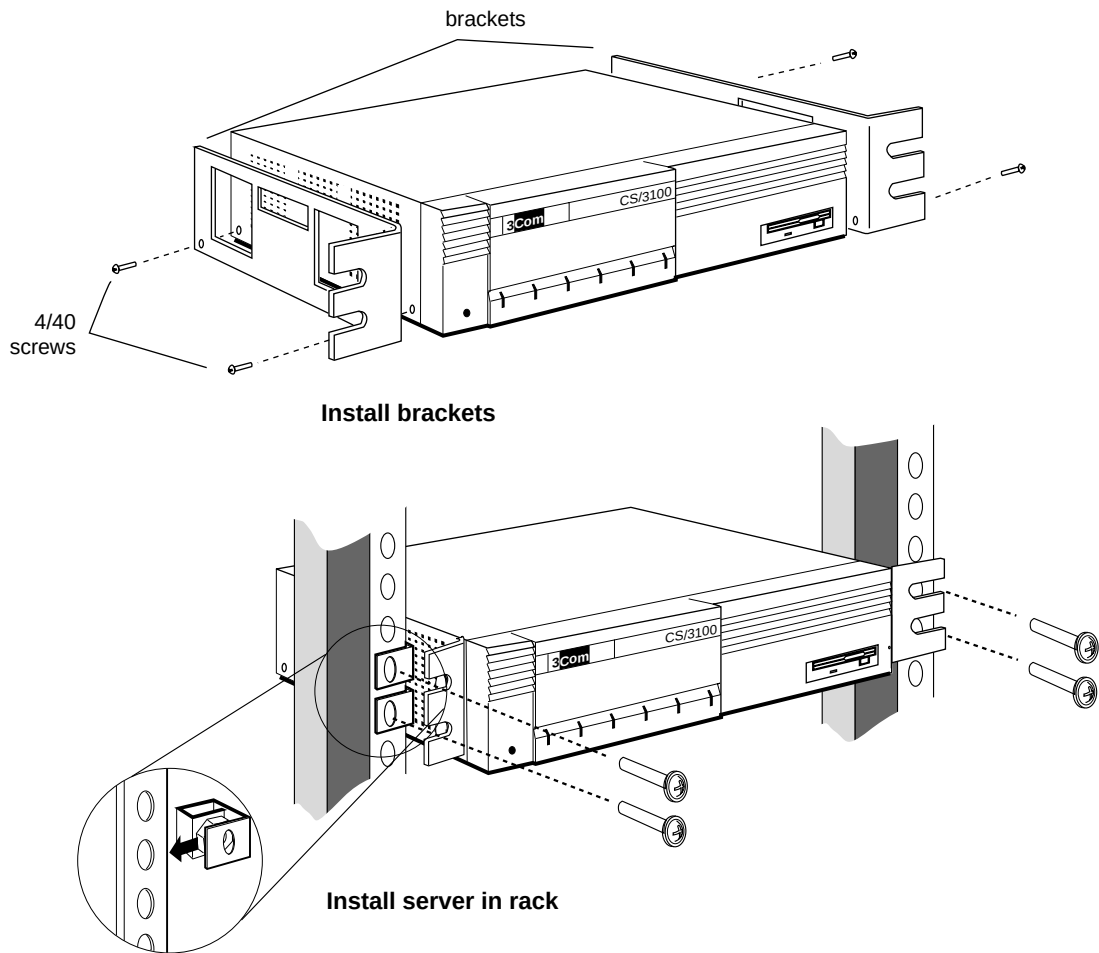


Figure 2-4 Mounting in a Rack

Mounting on the Wall

You can mount the server vertically on a wall using a wall mount kit (3Com part number 3C760).

When mounting the server vertically, place the server in the vertical stand with the rear panel pointing to one side. Be sure that the side with the exhaust openings points up. When you view the front panel in this position, the reset switch is closest to the floor. If you are mounting a CS/3100, make sure the diskette drive is accessible.

Cabling 16-Port Asynchronous Modules

This section describes how to cable 16-port asynchronous modules to a host, terminal, modem, or other serial equipment. Figure 2-5 provides an overview of the cabling and distribution options and who supplies them, while Figure 2-6 shows typical cabling applications.

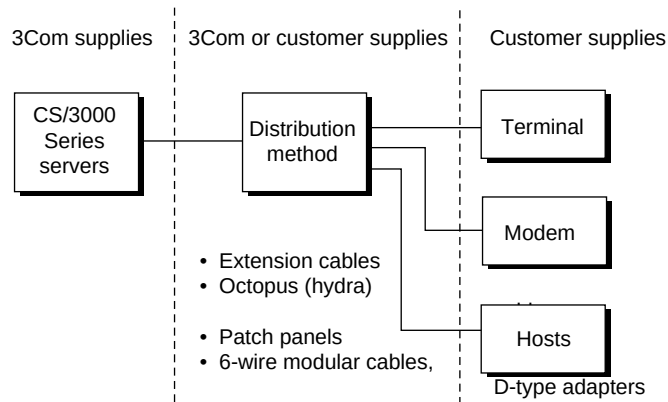


Figure 2-5 Cabling Overview

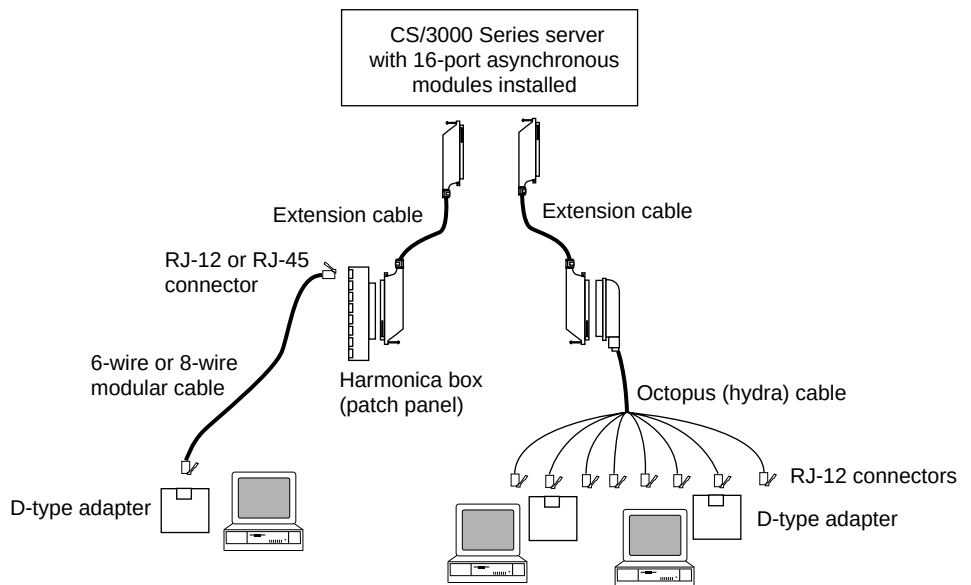


Figure 2-6 Typical Cabling Applications

The following sections describe the 16-port asynchronous module's serial connectors and the distribution options shown in Figure 2-5 and Figure 2-6. These sections also tell you whether you can buy the option directly from 3Com or your network supplier, and they give recommended vendors and part numbers.

Serial Connectors

A 16-port asynchronous module has two horizontally mounted 50-pin female RJ-21 (Telco) connectors that support RS-232/RS-423 signals. Each serial connector contains 8 ports, for a total of 16 ports per module, or 48 ports for a communications server with the full complement of three modules. The communications server acts as a DCE device and can be attached to a DTE device, such as a terminal, host, or printer, using a straight-through cable. If you want to connect the server to a DCE device, such as a modem, use a null modem cable.

For more information on 16-port asynchronous modules, refer to "16-Port Asynchronous Modules".

You can connect an extension or octopus cable to the serial connectors. Fasten these cables to the serial connectors with the screw and strain relief provided. For information on the cable strain relief mechanism, refer to "Cable Strain Relief".

For pin assignments of serial connectors, refer to Appendix A, "Pin Assignments."

Extension Cable

3Com recommends an extension cable with a 50-pin bottom-entry male connector on one end and a 50-pin bottom-entry male or female connector on the other end. Figure 2-7 shows this extension cable. Connect the extension cable's male connector to a serial connector on the 16-port asynchronous module. Connect the cable's remaining male or female connector to an octopus cable or a patch panel.

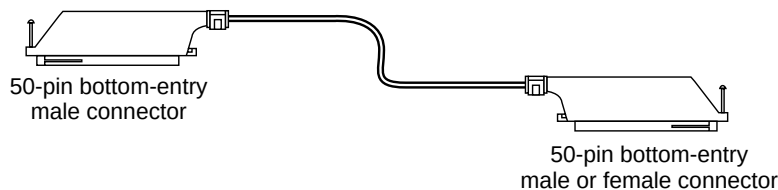


Figure 2-7 Extension Cable

CAUTION: To eliminate cable noise emission in excess of FCC Part 5, and CISPR22 (EN55022) specifications for Class A devices, the console cable should be 100% shielded (Inmac® braid shielded or equivalent) and have connectors with metallic backshells. Cable shields should be connected to backshells.

You can buy these cables directly from 3Com or your network supplier:

- 10-ft (3-m) extension cable (male-male), 3Com part number 3C6270
- 25-ft (8-m) extension cable (male-male), 3Com part number 3C6271
- 50-ft (15-m) extension cable (male-male), 3Com part number 3C6272

Table 2-2 shows other recommended vendors and part numbers.

Table 2-2 Extension Cable Vendors and Part Numbers

Vendor	Part Number (PVC)	Part Number (FRD)	Cable Length	Gender of Connectors
MOD-TAP	40-101-11	40-201-11	1 ft (0.3 m)	Male-male
MOD-TAP	40-101-12	40-201-12	1 ft (0.3 m)	Male-female
MOD-TAP	40-110-12	40-210-12	10 ft (3 m)	Male-female
MOD-TAP	40-130-12	40-230-12	30 ft (9 m)	Male-female
MOD-TAP	40-150-12	40-250-12	50 ft (15 m)	Male-female
MOD-TAP	40-100-12	40-200-12	100 ft (30 m)	Male-female

Octopus (Hydra) Cable

To connect directly to host, terminals, modems, or other serial devices, 3Com recommends an octopus cable (also known as a hydra cable) that fans out the 50-pin Telco connector to eight RJ-12 connectors. The other end of this cable terminates in a 50-pin bottom-entry male connector. Figure 2-8 shows the octopus cable.

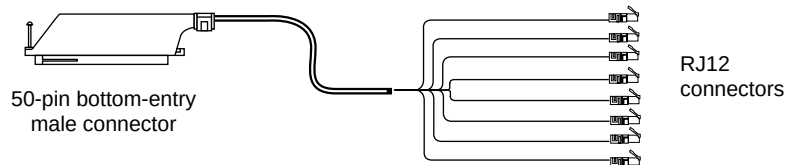


Figure 2-8 Octopus (Hydra) Cable

You can buy this cable directly from 3Com or your network supplier:

- 2-ft (0.6-m) octopus (hydra) cable, 3Com part number 3C6102

3Com also recommends the following vendors and part numbers:

- 4-ft (1.2-m) octopus (hydra) cable, MOD-TAP part number 24-466-10
- 6-ft (1.8-m) octopus (hydra) cable, MOD-TAP part number 24-666-10

You can connect directly to your serial equipment or to a patch panel by using adapters that convert the octopus cable RJ-12 connectors to DB-25, .

Patch Panel If you want to connect to devices through a patch panel, 3Com recommends a rack-mounted patch panel that fans out eight 6-pin ports through RJ-12 jacks. The panel has three groups of eight ports, as shown in Figure 2-9 and Figure 2-10. Each group of eight ports is called a harmonica box. Three harmonica boxes compose one patch panel. Figure 2-9 shows pin assignments for attachment to a modem or other data communications equipment (DCE). Figure 2-10 shows pin assignments for attachment to a terminal, host, printer, or other data terminal equipment (DTE).

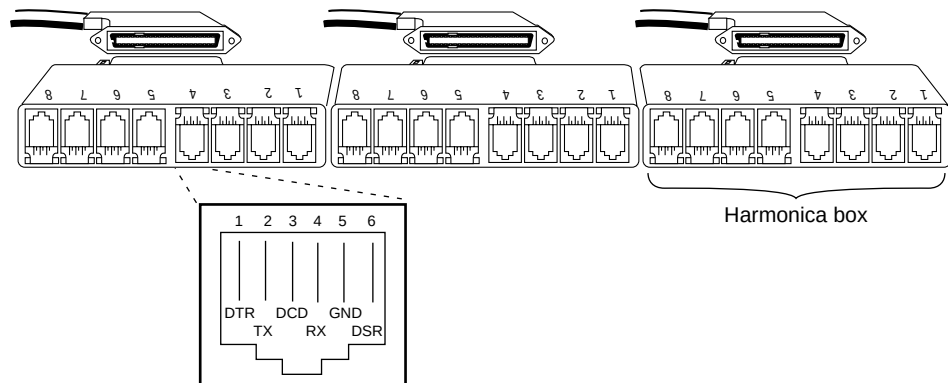


Figure 2-9 Pin Assignments of Patch Panel for Attachment to DCE

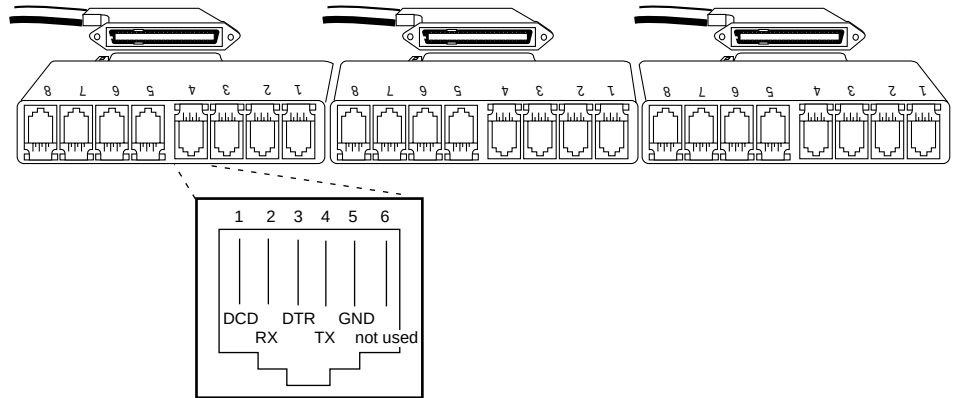


Figure 2-10 Pin Assignments of Patch Panel for Attachment to DTE

On the other side from the eight RJ-12 ports, each harmonica box contains a 50-pin female connector that can mate with a 50-pin bottom-entry male connector terminating an extension cable.

You can buy these patch panels directly from 3Com or your network supplier:

- 24-channel RJ-12 patch panel, 3Com part number 3C6101
- 24-channel RJ-45 patch panel, 3Com part number 3C6107
- 48-channel RJ-45 patch panel, 3Com part number 3C6106

3Com also recommends the following vendors and part numbers:

- 24-channel patch panel, MOD-TAP part number 27.6E.249.B002G
- 48-channel patch panel, MOD-TAP part number 27.6E.489.B002G

Cabling from a Patch Panel to Your Device

3Com recommends the following equipment to cable from a patch panel to your host, terminal, modem, or other serial equipment:

- 6-wire modular cable, 25-ft (7.6-m)
MOD-TAP part number 05-668-0
- D-type adapter (converts RJ-12 from octopus cable to 25-pin RS-232)

To determine which adapter you need for your configuration, refer to “D-Type Adapters”.

**Wiring
Considerations**

You must consider the wiring scheme of your cabling when you connect a device such as a host, terminal, modem, or other serial equipment to a serial connector on a 16-port asynchronous module.

The asynchronous module's serial ports are configured as DCE for attachment to DTE devices, such as terminals. With the right type of cable, you can also attach these ports to DCE devices, such as modems. See Appendix A, "Pin Assignments," for pin assignments of these connectors.

**Connecting the
Cables**

You need a small slotted screwdriver. To cable hosts, terminals, modems, or other serial equipment to a 16-port asynchronous module's serial connector, follow these steps:

- 1** Decide which cabling options to use to connect your hosts, terminals, modems, or other serial equipment to each serial connector—for example, an extension cable, octopus cable, and D-type adapter, or an extension cable, patch panel, 6-wire cable, and D-type adapter.
- 2** Assemble the cables, patch panels, and adapters.
- 3** Cable hosts, terminals, modems, or other serial equipment to each serial connector.
- 4** Install a cable strain relief mechanism for each module.

This mechanism consists of a metal bracket and a captive screw.

Install one bracket in the upper portion of the back panel between the two serial connectors of each 16-port asynchronous module (see Figure 2-11).

- a** Slip the long bar with curved edges at one end of the bracket over each serial cable connector, and the integral tab at the other end of the bracket into the small hole in the panel.
- b** Fasten the bracket to the panel with the screw. Do not overtighten.

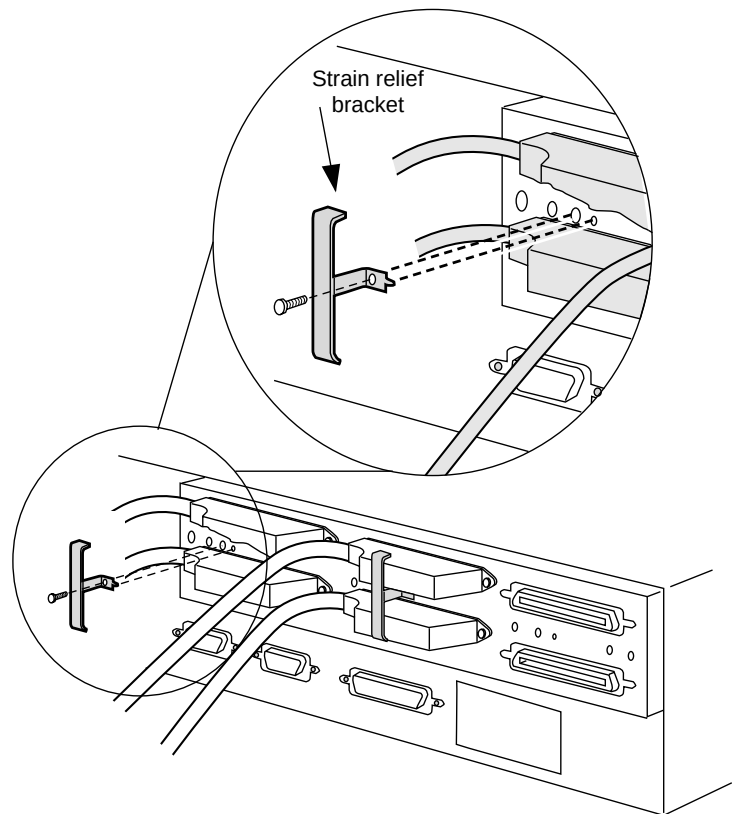


Figure 2-11 Installing Cable Strain Relief

Cabling Ethernet Interface Modules

Procedures for cabling the two types of modules differ and are described in separate sections.

Cabling a Single-Port AUI Module

To perform this installation, you need either an external transceiver, a fanout box (repeater), or a hub, and an AUI cable no longer than 150 ft (46 m). You must provide your own transceiver, fanout box, or hub. You can buy the cables shown in Table 2-3 from 3Com or your network supplier. For AUI pin assignments, refer to “AUI Port”.

Table 2-3 3Com AUI Cables

Length	Type	Part Number
15 ft (4.6 m)	Standard	3C6193

Table 2-3 3Com AUI Cables (continued)

Length	Type	Part Number
30 ft (9 m)	Standard	3C6194
50 ft (15 m)	Standard	3C6195
75 ft (23 m)	Standard	3C6196
100 ft (30 m)	Standard	3C6197
150 ft (46 m)	Standard	3C6198
6 ft (2 m)	PVC	3C110-002
16 ft (5 m)	PVC	3C110-005
32 ft (10 m)	PVC	3C110- 010
49 ft (15 m)	PVC	3C110- 015
15 ft (4.6 m)	Teflon®	3C6156
30 ft (9 m)	Teflon	3C6157
50 ft (15 m)	Teflon	3C6158
75 ft (23 m)	Teflon	3C6159
15 ft (4.6 m)	Positive attachment	3C6139
30 ft (9 m)	Positive attachment	3C6140
50 ft (15 m)	Positive attachment	3C6141
75 ft (23 m)	Positive attachment	3C6142

To connect the AUI port to a thick or thin coaxial, twisted-pair, or fiber-optic network using a transceiver, fanout box, or hub, follow these steps:

- 1 Install the external transceiver, fanout box, or hub on the network.
Refer to the instructions that came with your transceiver, fanout box, or hub.
- 2 Connect one end of the AUI cable to the AUI port and the other end to the transceiver, fanout box, or hub.



CAUTION: *To eliminate cable noise emission in excess of FCC Part 15 Subpart J, or CISPR22 (EN55022) for Class A devices, all cables should be triple-shielded (Inmac 536888 or equivalent) and have connectors with metallic backshells. Cable shields should be connected to backshells.*

- 3 Slide the latch on the AUI port into the closed position, as shown:

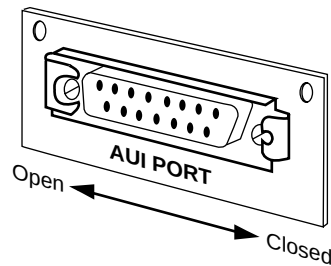


Figure 2-12 Latch on AUI Port

Cabling a Single-Port RJ-45 Module

To perform this installation, you need a straight-through twisted-pair cable a maximum of 330 ft (100 m) long.

You must provide the twisted-pair cable. 3Com recommends the following cables for European customers only:

- Shielded twisted-pair cable (100 ohms), Level 5 data grade media cable, for example, AT&T™ type 2061, 1061, 1261 or equivalent.



CAUTION: *This caution applies to customers in Europe only. To eliminate cable noise emission in excess of VDE 0871 or CISPR22 (EN55022) for Class A devices, the twisted-pair cable should be shielded and have connectors with metallic backshells. Cable shields should be connected to backshells.*

3Com recommends the following cables for all other customers, including those in the U.S. and Canada:

- Unshielded twisted-pair cable (100 ohms), Level 3 LAN and high-speed data cable, for example, Anixter CM-00424BAG-3, Belden 1155A, or equivalent.

To cable the single-port RJ-45 module to a twisted-pair segment, use this procedure:

- 1 Plug the RJ-45 connector on one end of the twisted-pair cable into the RJ-45 port.
- 2 Plug the connector at the other end into a wall outlet, hub, or other device.

Attaching a Printer

To attach a printer to a CS/3000 series server, you need a standard PC printer cable with a Centronics-type connector. The cable between the server and the printer should not be more than 12 feet long, so you must locate your printer close to the server.

Follow these steps:

- 1 Attach the DB-25 end of the printer cable to the Parallel Printer port on the communications server.
- 2 Attach the Centronics end of the cable to the printer.

For wiring information for the parallel printer port, refer to Appendix A, “Pin Assignments.”



CAUTION: *To eliminate cable noise emission in excess of FCC Part 15 Subpart J, or CISPR22 (EN55022) for Class A devices, all cables should be triple-shielded (Inmac 536888 or equivalent) and have connectors with metallic backshells. Cable shields should be connected to backshells.*

Attaching a Console

You may need to attach a console to perform the following tasks:

- Modify firmware parameters as described in Appendix C, “Monitor Utility.”
- Copy communications server software as described in “Copying and Formatting Diskettes”.
- Configure the communications server software as described in the *Multiprotocol Communications Server Operation Guide*, *Multiprotocol Communications Server Software Reference Guide*, and software release notes.
- Perform diagnostics and a memory dump if your server fails

The console also displays startup and server operation messages. These messages may help you troubleshoot startup or operating problems.

The console port is based on the 9-pin IBM PC AT standard, and is configured as data terminal equipment (DTE). To connect a terminal or other DTE device, you need a standard IBM PC AT 9-pin serial printer cable or null modem cable.

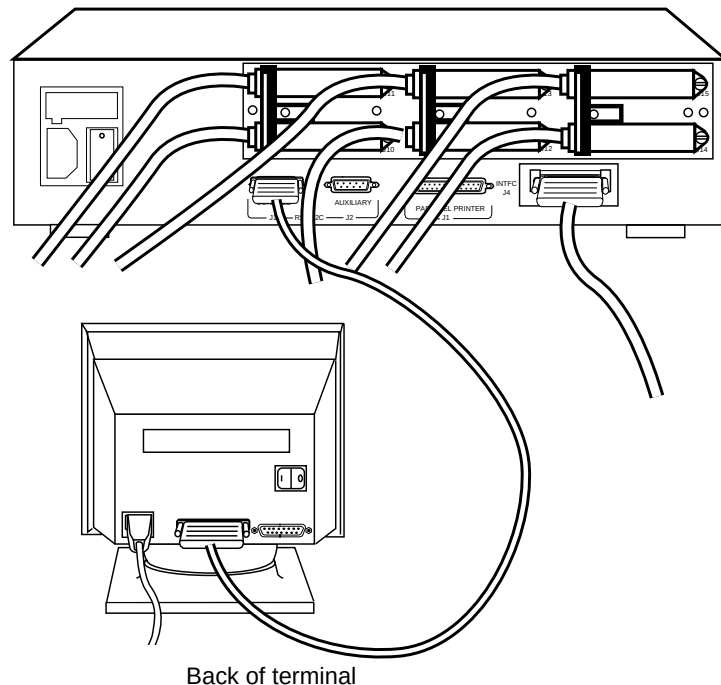


CAUTION: To eliminate cable noise emission in excess of FCC Part 15 Subpart J, or CISPR22 (EN55022) for Class A devices, the console cable should be triple-shielded (Inmac 536888 or equivalent) and have connectors with metallic backshells. Cable shields should be connected to backshells.

For wiring information for the console port connector, refer to Appendix A, “Pin Assignments.”

To attach a console, follow these steps:

- 1 Attach one end of the cable to the console port on the back panel of the communications server and the other end to the modem port on the back of a terminal (see Figure 2-13). If you are using a PC with emulator software, attach the other end to the PC's serial port.



Back of terminal

Figure 2-13 Attaching Terminal to Console Port

- 2 Verify that the terminal's configurable parameters match the settings in Table 2-4.

Table 2-4 Console Port Configuration Settings

Parameter	Setting
Baud rate	9600
Number of data bits	8
DTR	Ignored
Duplex	Full
Echo	Off
Flow control	XON/XOFF
Parity	None
Stop bits	1

If your terminal's parameter settings differ from those in Table 2-4, reconfigure the terminal.

- 3 Turn the terminal on.

Attaching the Power Cable



A power cable is supplied with your CS/3000 series server. If the power cable does not match your requirements, contact your network supplier.

WARNING: *Powering on the server without a blanking plate or module in each slot or without a cover can cause overheating and fire hazard. The warranty is void if this occurs.*

To attach the power cable, follow these steps:

- 1 Make sure that the AC power switch is in the O or off position.
- 2 Attach the power cable to the receptacle on the back panel.
- 3 Plug the other end of the power cable into an AC power source.

The AC power source must meet the requirements outlined in "Specifications". The server must be connected to its AC power source with a grounded line cord to meet safety requirements.

Modifying the Firmware Configuration

The CS/3000 series server's firmware is preset at the factory for basic installations; in most cases you do not need to reconfigure it.

If you want to customize your server's operation, you may need to modify the default settings of certain firmware parameters. You can access these parameters through the monitor utility. For information on firmware configuration and the monitor utility, refer to Chapter 4, "Configuration," and Appendix C, "Monitor Utility."

3

STARTUP

Once you have installed the server hardware as described in Chapter 2, “Installation,” you are ready to start your server. You can start from software stored on a 3Com Remote Boot and Configuration Services (RBCS) server, from a generic TFTP/FTP server, or from a diskette inserted in the local drive (CS/3100 only).



Although some multiprotocol communications software packages include Network Control Server (NCS) software for backward compatibility, 3Com no longer provides technical support for NCS software or servers.

You can follow these procedures for most hardware configurations without changing the default firmware configuration. If you want to change the firmware configuration, do so before booting the server. For more information, refer to Chapter 4, “Configuration.”

If you plan to use a console to access the server monitor, make sure the console is configured correctly. Refer to “Attaching a Console”.

Booting from the Network

The CS/3000, which has no diskette drive, can boot only from the network. The CS/3100 can boot either from the network or from a local diskette.



To boot a CS/3100 from the network, you must configure the initial boot source to “Network.” For information on changing the initial boot source, refer to “Initial Boot Source”.

Installing Software on an RBCS Server

3Com’s Remote Boot and Configuration Service (RBCS) is network control server software that runs on the Sun SPARC systems product line using SunOS 4.1 or later. It provides network control services to 3Com communications servers and internetworking servers (client servers) running the TCP/IP protocols.

CS/3000 series software for RBCS servers is supplied on a distribution diskette. To install or upgrade this software, refer to the *Multiprotocol Communications Server Operation Guide* or software release notes.

Installing Software on a Generic TFTP/FTP Host

The communications server can boot from any network that supports a TFTP server (for the system image) and an FTP server (for the configuration images). The TFTP and FTP servers will most likely be on the same host, but this is not a requirement for operation.

CS/3000 series software for TFTP/FTP servers is supplied on a distribution diskette in 3.5-inch DOS or UNIX tar format. To install this software, refer to the *Multiprotocol Communications Server Operation Guide* or software release notes.

Booting from an RBCS Server

The following steps describe how to boot the communications server from an RBCS server:

- 1 Make sure the communications server power is off.
- 2 If the communications server is not already connected to a transceiver, connect a transceiver cable between the server and transceiver. Make sure the transceiver is connected to the network.
- 3 Configure the RBCS server to support boot of the communications server.
- 4 Turn on the communications server.

All LEDs on the front panel light briefly when the server is turned on. The Power and Self Test LEDs should remain on after the others turn off. If the Power and Self Test LEDs fail to light or do not remain on, turn off the server by pressing the O side of the power switch. Verify that the power cord is connected properly to a working outlet, then turn the server power on again. If the problem persists, refer to “Startup Problems” on page 6-1.

The Self Test LED remains on during self-test diagnostics. These diagnostics last about two minutes and 15 seconds (or about 30 seconds if Memory Test Bypass is enabled; refer to “Memory Test Bypass”). The server then enters the boot phase. The Boot State LED remains on during boot, and the Packet Received LED lights as the image is received from the RBCS server. This process takes several minutes. Following boot, the server reads configuration information from the RBCS files.

**Booting from a
Generic TFTP/FTP
Host**

To boot your communications server from a generic TFTP/FTP host, you must configure the communications server firmware and software. For firmware configuration, refer to Chapter 4, "Configuration." For software configuration, refer to the *Multiprotocol Communications Server Operation Guide* or software release notes. Enter the FTP server address under the FAP server IP address parameter in the Change IP/TFTP Parameters submenu.

Remote Reboot

If you plan to reboot your communications server remotely from an RBCS or TFTP server, you must set Auto-Reboot to Reboot only. For information on configuring Auto-Reboot, refer to Chapter 4, "Configuration."

**Booting from
Diskette**

Before you use a Model CS/3100 communications server, make a copy of the software distribution diskette. After you copy the distribution diskette, store it in a safe place and use only the copy as the working diskette.

If you are upgrading from earlier software, you may be able to copy configuration information from your old working diskette onto the new one. Refer to the software release notes for instructions.

You may want to make a backup copy of your working diskette every time you change the values of the software parameters. If for any reason the data in your current working diskette is corrupt, you can use the backup copy and still boot the server with the correct parameter settings.

**Copying and
Formatting
Diskettes**

To copy a diskette on a CS/3100, follow this procedure:

- 1 Connect a terminal to the console port on the communications server's back panel.
- 2 Configure the terminal to 9600 baud, 8 data bits, 1 stop bit, and no parity.



This step assumes the default firmware configuration. If you have used firmware configuration commands to change the baud rate, configure the terminal accordingly.

- 3 Make sure that there is no diskette in the server's disk drive (Model CS/3100 only) and that the server cannot use a network boot source (an RBCS or TFTP/FTP server).

If a diskette is in the disk drive, remove it. If the communications server is configured to use a network boot source, disconnect it from the network, or make sure that it is not listed in the boot database of an RBCS or TFTP/FTP server. To determine whether the server is in the boot database of an RBCS server, refer to the *Remote Boot and Configuration Services User's Guide*.

- 4 Turn on the unit or, if it is already on, press the reset switch on the front panel to reboot.

The server tries to boot. (The booting process takes a few minutes.) Because the boot source is not present, it displays the following message:

```
Do you want to enter monitor (Y/N)?
```

- 5 Type **Y** at the prompt.

The following message appears:

```
3Com Corporation CS/3000 Series Monitor
>
```

You are now in monitor mode.

- 6 To copy a diskette, enter the copy command:

```
co
```

The following message appears:

```
Copy diskettes must be formatted
Type f to format your diskettes now
Any other key to continue with copy:
```

- 7 If you have already formatted a destination diskette on the communications server, press any key to start the copy and proceed to step 10. If you need to format a diskette, type **f**. The following prompt appears:

```
Insert diskette to be formatted
Enter the density to begin formatting operation
Escape to abort the format
Return to use default density (2mb):
```



You can also format diskettes without the copy command. Refer to "Formatting Diskettes without the Copy Command".

- 8** Insert a blank 2 MB (high-density) diskette (1.44 MB formatted). (Make sure that the diskette is not write-protected.)

- 9** Type **2** or press the Return key to begin the format.

The server formats your diskette. When it finishes, this prompt appears:

```
Format another diskette (y/n):
```

To format another diskette, type **y**. To continue with the copy procedure, type **n**. The following prompt appears:

```
Insert master and hit return to continue
```

- 10** Insert the master (source) diskette (the diskette you want to copy from) and press the Return key.

The server copies files from the master diskette. This message appears:

```
Reading...OK
```

```
Insert copy and hit return to continue
```

- 11** Remove the master diskette.

- 12** Insert the formatted copy (destination) diskette (the diskette you are copying to) into the diskette drive and press the Return key.

A message similar to the following appears during and after copying:

```
Writing...verifying...OK
```

```
Copy another disk? (y/n):
```

If you want to copy another diskette, type **y**. If you do not want to copy another diskette, type **n**.

- 13** When the copy procedure is completed, remove the newly created diskette and label it with the software version.

Store the original diskette in a safe place, and use a newly created diskette as your working diskette. Make sure the working diskette is not write-protected.

Once you have copied your diskettes, you are ready to start the server. Refer to "Booting the Communications Server" for the procedure.

Formatting Diskettes without the Copy Command

You can also format diskettes without the copy command, using the following procedure:

- 1 Enter monitor mode using steps 1 through 5 in the previous procedure.
- 2 To format a diskette, enter the format command:

fo

The following message appears:

```
Insert diskette to be formatted
Enter the density to begin formatting operation
Escape to abort the format
Return to use default density (2Mb):
```

- 3 Insert a blank 2 MB (high-density) diskette (1.44 MB formatted). (Make sure it is not write-protected.) Type **2** or press the Return key to begin the format.

The server formats your diskette. When it finishes, this prompt appears:

```
Format another diskette (y/n):
```

- 4 Type **n** to end the format procedure or **y** to format another diskette.

Booting the Communications Server

Once you have completed all cable connections and copied the software distribution diskette, you are ready to boot your communications server:

- 1 Insert the working diskette in the drive, label side up.
- 2 If the server is off, turn it on by pressing the I side of the power switch located on the back panel. If it is on, press the reset switch.

All LEDs on the front panel light briefly when the server is turned on. The Power and Self Test LEDs should remain on after the others turn off. If they do not, turn off the server by pressing the O side of the power switch. Verify that the power cord is connected properly to a working outlet, then turn the server on again.

The Self Test LED remains on during self-test diagnostics. These diagnostics last about two minutes and 15 seconds (or about 30 seconds if Memory Test Bypass is enabled; refer to “Memory Test Bypass”). The server then enters the boot phase. The Boot State LED remains on during boot, which may take several minutes. The server then reads software configuration information,

such as parameter tables, routing tables, and directory of logical names, from the diskette. This process takes about a minute and a half.



CAUTION: 3Com suggests that you leave a working copy of the diskette in the drive. If the power fails, the communications server must have a diskette in the drive to restart automatically and to record any parameter changes.

Normal Startup Messages

If a terminal is attached to the console port, startup messages appear on it during the boot process. These messages vary, depending on your boot source. For example, if the firmware's Initial Boot Source parameter is set to Auto or Floppy on a Model CS/3100, messages similar to the following appear on the console:

```
CS/3000 Series Power-up
CPU - 4 Megs Private RAM, 2 Megs Shared RAM, - Passed N4 MMON rev. 003
Ethernet Controller - Passed Station Address - 080002089BB5
Auxiliary Processor card installed.
128K ram installed
Diagnostic Upload - Completed
Auxiliary Processor card diagnostics - Passed
Booting from Floppy
```

The server's Ethernet address and firmware version are displayed along with other startup messages.

For more information on startup messages, refer to Appendix B, "Startup Messages."

If the LEDs or console messages indicate an error, refer to Chapter 6, "Troubleshooting." If you still cannot resolve the problem, contact 3Com or your network supplier.

Boot Problems

If the Self Test LED remains on longer than three minutes (longer than one minute if Memory Test Bypass is enabled), the unit has failed the test. Contact 3Com or your network supplier.

If a console is attached to the port designated as the console port, check the console for confirmation of the failure. The server may not always be able to report the failure on the console (for example, CPU failure). Report the failure and console messages, if any, to 3Com or your network supplier. Appendix B, "Startup Messages," provides information on these messages.

If the Self Test LED flashes after the self-test diagnostics have run, the communications server is unable to boot its software. If you are booting remotely, verify that the host server is properly configured and attached to the network. If you are booting from diskette, verify that the diskette is inserted properly in the drive. Press the communications server's reset switch to try again.

Shutting Down

To shut down a communications server, follow these steps:

- 1** Notify all users that the server is being shut down.

You can notify users from a terminal port on the server or from the console via the `BRoadcast` command. Refer to the *Multiprotocol Communications Server Operation Guide* and *Multiprotocol Communications Server Software Reference Guide* for information on this command.

- 2** Disconnect all active sessions.

Refer to the *Multiprotocol Communications Server Operation Guide* and *Multiprotocol Communications Server Software Reference Guide*.

- 3** To shut down a CS/3000, turn the power off. On a CS/3100, wait until the disk drive LED goes out, then turn the power off.

If the disk drive LED remains on, enter monitor mode by pressing the hardware interrupt switch and the Return key on the console keyboard. If the disk drive LED remains on after you press the hardware interrupt switch, perform a soft reset by entering `k` at the monitor prompt (`>`).

If the disk drive LED remains on after you enter the soft reset command, do the following:

- a** Eject the diskette.
- b** Power off the server.
- c** Contact 3Com or your network supplier.

4

CONFIGURATION

To configure CS/3000 and CS/3100 firmware settings, use the Firmware Configuration Utility. Firmware is preset at the factory for basic installations; in most cases you do not need to reconfigure it. This chapter describes how to make changes if necessary.

For information on configuring communications server software, refer to the *Multiprotocol Communications Server Operation Guide*, *Multiprotocol Communications Server Reference Guide*, and software release notes.

If you are booting your server from a diskette, software parameter values are stored on the diskette. 3Com recommends that you make a backup copy of your working diskette each time you modify software parameters. If for any reason the data in your current working diskette becomes corrupted, you can use the backup copy to restore the desired settings. For instructions for copying diskettes, refer to “Copying and Formatting Diskettes”.

Entering the Firmware Monitor

To use the Firmware Configuration Utility, you must place the communications server in monitor mode. This mode suspends normal operation and allows interaction only with the monitor command interface. After using the monitor, you must usually reboot the communications server to resume operation.

For a complete description of commands available in monitor mode, refer to Appendix C, “Monitor Utility.”

During normal operation, you can access the monitor by turning on the server without a boot source, by configuring firmware to access the monitor at start-up, or (if you have Network Manager privilege) by entering the MONitor software command. For a full description of these procedures, refer to Appendix C, “Monitor Utility.” If you are configuring firmware for the first time, you should turn on the server without a boot source, using the following procedure:

- 1 Connect a terminal to the console port, using a modem cable. For wiring information, refer to Appendix A, “Pin Assignments.”

- 2 Configure the terminal to 9600 bps, 8 data bits, 1 stop bit, and no parity.



These instructions assume the default firmware configuration. If you have used firmware configuration commands to change the baud rate or to select a different console port, modify the instructions accordingly.

- 3 Make sure that there is no diskette in the server's disk drive (Model CS/3100 only) and that the server cannot use a network boot source (an RBCS or TFTP/FTP server).

If a diskette is in the disk drive, remove it. If the communications server is configured to use a network boot source, disconnect it from the network, or make sure that it is not listed in the boot database of an RBCS or TFTP/FTP server. To determine whether the server is in the boot database of an RBCS server, refer to the *Remote Boot and Configuration Services User's Guide*.

- 4 Turn on the unit or, if it is already on, press the reset switch on the front panel to reboot.

The server tries to boot. (The booting process takes a few minutes.) Because the boot source is not present, it displays the following message:

```
Do you want to enter monitor (Y/N)?
```

- 5 Type **Y** at the prompt.

The following message appears:

```
3Com Corporation CS/3000 Series Monitor
>
```

You are now in monitor mode. For other methods of entering monitor mode, refer to "Entering the Monitor".

Changing the Configuration

To change the communications server configuration, follow this procedure:

- 1 Enter the firmware configuration command **fc** at the monitor prompt.

The following menu is displayed:

```
Firmware Configuration Commands:  Utility

C          -          Change parameters
D          -          Display parameters
esc       -          Exit to monitor
```

2 Type **D** to display current parameter settings.

The following display shows factory default settings for the CS/3100 (except for the interface address, which is only an example):

```
Current Parameters:
Interface address:      08000203A89A
J1 baud rate:          9600
J2 baud rate:          9600
Continuous self-test:  Disabled
Auto-reboot:           Reboot only
Initial boot source:   Floppy
Number of reboots:     00
Network boot string:   _cs30
Boot retries:          Try Forever
Boot protocol:         SLP
Change IP/TFTP parameters:
Memory Test By-pass:   Disabled
esc - Return to previous menu
```

Default settings for the CS/3000 are the same, except that the initial boot source is "Network."

3 To return to the Firmware Configuration Utility menu, press the Escape key.

4 To change the current parameters, type **C**.

The Change Parameters menu appears:

```
Current Parameters:
1. J1 baud rate:      9600
2. J2 baud rate:      9600
3. Continuous self-test: Disabled
4. Auto-reboot:       Reboot only
5. Initial boot source: Floppy
6. Number of reboots:  00
7. Network boot string: _cs30
8. Boot retries:       Try Forever
9. Boot protocol:      SLP
A. Change IP/TFTP parameters:
B. Memory Test By-pass: Disabled
esc - Return to previous menu
```

Select parameter ?

5 Type the number or letter for the parameter you want to change.

Table 4-1 describes each parameter and the choices available. More detailed descriptions of each parameter follow this table.

- 6 When you are finished changing firmware configuration parameters, press the Escape key to return to the Firmware Configuration Utility menu.
- 7 Press the Escape key again to exit to the monitor prompt.
- 8 Press the reset switch or power off the server to exit monitor mode.

Table 4-1 Firmware Configuration Parameters

Parameter	Values
1. J1 baud rate	1. 110 2. 300 3. 1200 4. 2400 5. 9600* 6. 19200 7. 38400
2. J2 baud rate	1. 110 2. 300 3. 1200 4. 2400 5. 9600* 6. 19200 7. 38400
3. Continuous self-test	d - Disable* e - Enable
4. Auto-reboot	m - Boot monitor r - Reboot only* u - Upload then reboot
5. Initial boot source	a - Auto* f - Floppy m - Monitor n - Network
6. Number of reboots	r - Reset
7. Network boot string	_cs30*
8. Boot retries	O - Try One Time F - Try Forever*
9. Boot protocol	B - BTP Boot S - SLP Boot* T - TFTP Boot
A. Change IP/TFTP parameters	See "Change IP/TFTP Parameters".
B. Memory test bypass	D - Disable* E - Enable

* Default.

Interface Address	Displays the Ethernet address of the Ethernet interface port. You cannot configure this parameter.
J1 Baud Rate	Sets the baud rate for the console port. The default value is 9600. You can set the rate to 110, 300, 1200, 2400, 9600, 19200, or 38400 bps. Console port parity is set to none, and the number of data bits is set to 8. You cannot change these values.
J2 Baud Rate	Sets the baud rate for the auxiliary port. The default value is 9600. You can set the rate to 110, 300, 1200, 2400, 9600, 19200, or 38400 bps. Auxiliary port parity is set to none, and number of data bits is set to 8. You cannot change these values.
Continuous Self-Test	Disabling continuous self-test, the default, causes the self-test diagnostics to run only at power-on and reset. When you set this parameter to enable, the diagnostics run continuously, except when the server is powered off or in monitor mode.
Auto-Reboot	The values available are “Boot monitor,” “Upload then reboot,” and “Reboot only.” The setting takes effect when errors, or the software ReBoot command, require the server to be rebooted. “Boot monitor” puts the server into monitor mode so it can be rebooted by the user. This setting prevents the communications server from rebooting after a crash and allows the network manager to perform a memory dump or debugging procedures. You can perform memory dumps from a CS/3000 to an RBCS or TFTP/FTP server. You can perform memory dumps from a CS/3100 to its internal diskette drive or to an RBCS or TFTP/FTP server. For further information, refer to “Memory Dump Procedures”. “Upload then reboot” automatically dumps the communications server’s memory to the RBCS or TFTP/FTP server, then reboots the communications server. “Reboot only” (the default) automatically reboots the communications server.
Initial Boot Source	Determines the source your server boots from at power-on or reset. The CS/3000 can boot from the network or enter the monitor. The CS/3100 can boot from a diskette or the network, or enter the monitor. There are four options: “Auto,” “Floppy,” “Monitor,” and “Network.” The default is “Auto.” The server first checks whether a diskette is in the drive; if no

diskette is present, it tries to boot from the network. If it cannot, it asks whether you want to enter the monitor. Type **N** to retry the boot sequence, or **Y** to enter monitor mode and boot manually. If you do not respond, **N** is assumed.

If you select “Floppy,” the server tries to boot from diskette. If it cannot, it displays a diagnostic message such as “Diskette not present.” It also asks if you want to enter the monitor.

If you select “Network,” the server tries to boot from an RBCS or TFTP/FTP server. If it cannot, it asks if you want to enter the monitor.

If you select “Monitor,” or if you enter monitor mode when another boot option fails, the server enters monitor mode, and the monitor prompt appears on the console. Enter **bt** to boot from diskette (Model CS/3100 only) or **bs** to boot from the network.

Number of Reboots

Counts the number of times the communications server has been rebooted, including failed attempts. Type **r** to reset the counter to zero.

Network Boot String

Specifies the filename of the image to be downloaded from an RBCS or TFTP/FTP server and executed. This string can be up to 128 characters long. The default is “_cs30” (without the quotation marks).

If your boot protocol is System Load Protocol (SLP), do not modify the default network boot string.

If your boot protocol is TFTP and your Address Discovery Protocol is Local Information, you must change the default network boot string to the complete pathname of the file you want to download. The default, “_cs30,” is not a valid filename. The pathname you enter depends on your UNIX® platform or generic TFTP server. For example, the boot string for a CS/3000 booting multiprotocol software version 6.2 from a DOS TFTP server would be “T30V62” (without the quotation marks).

Boot Retries

Specifies server behavior if a boot attempt fails. If you set “Try One Time,” the server tries to boot only once. If you set “Try Forever,” the server continues trying to boot until a suitable boot source is discovered.

Boot Protocol

Determines the file transfer protocol the communications server uses when it downloads software from an RBCS or generic TFTP/FTP server. The choices

are Bridge Transport Protocol (BTP), System Load Protocol (SLP), and Trivial File Transfer Protocol (TFTP).

BTP is a 3Com proprietary load protocol. This protocol was formerly used with 3Com Network Control Servers (NCSs). 3Com no longer supports NCS software, and you should not select this protocol. SLP is 3Com's implementation of the 802.1 standard System Load Protocol. TFTP is a file transfer protocol that is part of the TCP/IP protocol suite.

If you are configuring your server to boot from an RBCS server, you can use either SLP or TFTP. If you boot from a TFTP server, use TFTP.

If you select SLP as your boot protocol, the server uses the file specified by Network Boot String as the boot source. You do not need to configure additional parameters. If you select TFTP, you need to configure several other parameters. These parameters are described in the next section.

If you change the Boot Protocol parameter from TFTP to SLP and back to TFTP, check the Change IP/TFTP Parameters menu's Address Discovery Protocol field. Changing from TFTP to SLP and back to TFTP results in Address Discovery Protocol reverting from your configured setting to its default setting (BOOTP then RARP).

Change IP/TFTP Parameters

Because TFTP is a file transfer protocol, it must work in conjunction with a boot protocol to perform the boot procedure. When you specify TFTP as the boot protocol, you must configure several additional parameters. These parameters include Address Discovery Protocol, to specify the boot protocol, and others to specify IP addressing information.

To specify TFTP parameters:

- 1** Type **A** from the Change Parameters menu.

The Change IP/TFTP Parameters menu appears:

Change IP/TFTP parameters:

1. Adr discover protocol
 2. Client IP address
 3. Server IP address
 4. Gateway IP address
 5. Subnet mask value
 6. FAP server IP address
 7. IP security option
 8. TFTP upload path
- esc - Return to previous menu
Select parameter ?

Address discovery obtains the information listed in this menu either through static entries configured in firmware by the user, or by BOOTstrap Protocol (BOOTP) or Reverse Address Resolution Protocol (RARP) from another source during system boot. The discovery protocol you choose defines how much additional information you must provide.

If you choose static entries (local information), no information is discovered; you must enter all IP addressing parameters yourself. If you choose RARP, the communications server provides its Ethernet address in an RARP request message. The boot server maps this address into the corresponding IP address and returns it to the communications server in an RARP reply message. The mapping resides in the “ethers” and “hosts” databases, contained either in files under the /etc directory or in Network Information Service (NIS) maps. BOOTP is similar to RARP but can return more information.

The Address Discovery option also determines how the communications server downloads files from the boot server. If BOOTP is used, the filename to download is obtained from the BOOTP server. If RARP or Local Information is used, the server attempts a TFTP download of the file named in the Network Boot String parameter. Table 4-2 lists Address Discovery Protocol parameter options and their meaning.

If you select a value that includes BOOTP, you must add a corresponding entry to the bootptab file on the boot server. This file is usually found in the /etc directory, but its location may vary depending on your operating system and TFTP software.

Table 4-2 Address Discovery Protocol Parameters

Value	Meaning
BOOTP	BOOTP only.
BOOTP then RARP	The communications server first seeks TFTP server addresses using BOOTP; if this fails, it tries RARP. This is the default.
RARP	RARP only.
RARP then BOOTP	The communications server first seeks addresses using RARP; if this fails, it tries BOOTP.
Local Information	The communications server obtains addresses from static entries.

2 To specify other IP address parameters, type the letter for the parameter.

These parameters allow you greater control over booting your server, and are required if Address Discovery Protocol is “Local Information.” Table 4-3 lists the additional IP parameters and information for specifying them.

Table 4-3 IP Addressing Parameters

IP Option	Meaning
Client IP address	The IP address of the communications server. This parameter is required if Local Information is specified for address discovery protocol; otherwise, this address is obtained by BOOTP or RARP.
Server IP address	The IP address of the RBCS or TFTP/FTP server the communications server boots from. BOOTP requests are sent to this address. If this address is not specified, BOOTP requests are sent to the broadcast address.
Gateway IP address	If the communications server boots from an RBCS or TFTP/FTP server on another network, enter the IP address of the gateway. If booting across a gateway, you must specify both client and server IP address parameters.
Subnet mask value	The subnet mask value, if subnet masking is being used. If this parameter is not entered, its value is obtained from BOOTP.
FAP server address	If booting from a TFTP server, enter the IP address of the RBCS or FTP server that stores configuration files for the communications server software.
IP security option	Determines the classification protection level as specified in RFC 1038: 1 - don't care (default) 2 - Unclassified 3 - Confidential 4 - Secret 5 - Top Secret 6 - Other
TFTP upload path	The pathname to which to upload a memory image from the communications server to the RBCS or TFTP/FTP server. If specified, this is the pathname used when performing memory dumps to the network.

Memory Test Bypass

This parameter configures the server to perform the complete set or a shortened version of self-tests and diagnostics (omitting memory tests) at power-on or reset. The shortened version reduces the duration of the startup process (self-tests, diagnostics, and boot) to about 2 minutes if the boot source is a network or about 4 minutes if the boot source is a diskette.



Although setting the Memory Test Bypass parameter to “Enable” reduces the server’s startup time, 3Com recommends maintaining the default setting of “Disable” to detect memory failures.

5

MAINTENANCE AND UPGRADES

This chapter describes how to perform maintenance procedures for your communications server.

Any user can perform these procedures:

- Cleaning the diskette drive (Model CS/3100 only)
- Replacing the fuse
- Replacing Ethernet interface modules

Only qualified service personnel should perform these procedures:

- Replacing or adding 16-port asynchronous modules
- Replacing the diskette drive (Model CS/3100 only), power supply, memory chips, or EPROM

Maintenance

3Com recommends the following procedures for preventive maintenance:

- Observe the environmental requirements listed in Table 1-7 on page 1-15. Temperatures outside the recommended range can impair reliability and cause diskette access errors.
- Keep the area around the server clean. Avoid accumulated dust, especially around the air intake slots.
- If you need to handle the motherboard, auxiliary processor board, 16-port asynchronous modules, or Ethernet interface module, observe electrostatic discharge guidelines. Refer to “Preparation” for details.

For Model CS/3100 only:

- Handle the software distribution and working diskettes carefully. Always hold a diskette by its protective cover or by the label area; never touch the magnetic media, the metal clips at the edges, or the metal disk in the center.

- To avoid excessive diskette wear, change the working diskette every three months. Refer to “Copying and Formatting Diskettes” for the procedure for copying diskettes.
- In case of a crash, an immediate memory dump may help diagnose the problem. Keep six diskettes available for this purpose (they do not have to be formatted). The procedure for dumping memory is described in “Memory Dump Procedures”.

Cleaning the Diskette Drive Head

When you change the working diskette (Model CS/3100 only), clean the diskette drive head using a head-cleaning diskette intended for use with a 3.5-inch diskette drive. To clean the diskette drive head:

- 1 Apply solvent to the cleaning diskette, according to instructions provided with the head-cleaning kit.



CAUTION: *Do not use a fluorocarbon-based solvent; it will damage the heads. Use only alcohol-based solvents.*

- 2 Immediately insert the cleaning diskette in the drive.
- 3 Press the reset switch and wait until the Boot State light and the activity light on the diskette drive go out.
- 4 Press the reset switch three more times, each time waiting until the activity light on the diskette drive goes out.

Replacing the Fuse

The server's fuse is located inside the power supply module on the back panel. It is mounted in a single, removable cartridge.

If your unit persistently blows fuses, there may be a problem with either your system's power supply or your facility's supply voltage. Contact 3Com or your network supplier for assistance.

To change a fuse, follow this procedure:



WARNING: *Be sure the unit is turned off and the power cord is either disengaged from the unit's receptacle or unplugged from the wall socket.*

- 1 Remove the fuseholder cartridge by inserting a small slotted screwdriver into the slot, as illustrated in Figure 5-1.

- 2 Pry the cartridge loose. It should pop out easily.
- 3 Slide the fuseholder cartridge completely out of the enclosure.

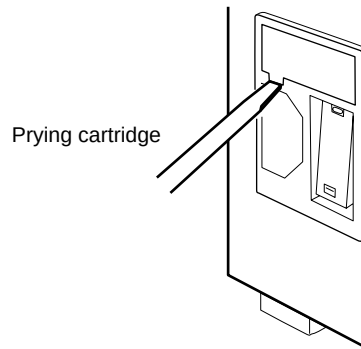


Figure 5-1 Removing the Fuseholder Cartridge

- 4 Remove the fuse clip insert from the fuseholder cartridge.
The fuse clips, conductors, and fuses are mounted on this cartridge. Pull up the plastic retainer on the fuseholder cartridge and slide the insert away from the cartridge, as shown in Figure 5-2.
 - 5 Once the fuse clip insert is clear of the fuseholder cartridge, pry the spent fuse from the fuse clip with the screwdriver.
 - 6 Replace the old fuse with a new fuse of the same type, size, and rating.
Use a 3-A, 250-V fast-blow fuse (5 mm by 20 mm).
-  **WARNING:** *For continued protection against fire hazard, replace the fuse only with a fuse having the same type and rating.*
- ATTENTION:** *Pour éviter le risque d'incendie, ne remplacer que par des fusibles de même type et valeur de courant.*
- 7 Reinstall the fuse clip insert in the cartridge so that the plastic retainer locks it in place.
 - 8 Reinstall the fuseholder cartridge in the receptacle.

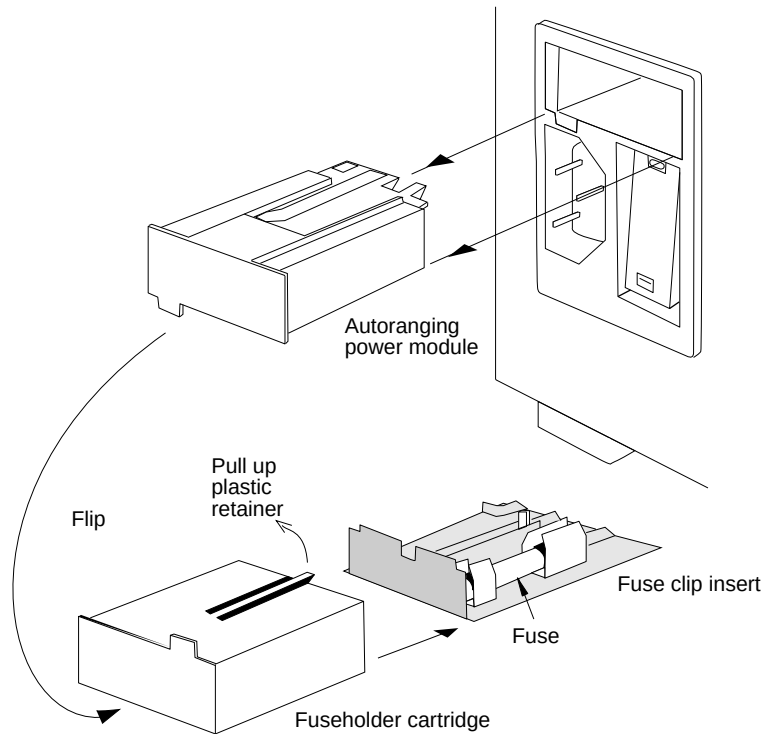


Figure 5-2 Opening the Fuseholder Cartridge

Replacing an Ethernet Interface Module

The procedure for installing an Ethernet interface module is similar for all types of modules. Whenever you handle an Ethernet interface module, adhere to these electrostatic discharge (ESD) guidelines to avoid damage:

- Keep the new module in its antistatic bag until you are ready to install it.
- Do not touch pins, leads, or solder connections on the board.
- Handle the board by the edges only.
- Observe proper grounding techniques, including using a foot strap and grounded mat or wearing a grounded static discharge wrist strap.

You need a #1 Phillips screwdriver and a small slotted screwdriver. To replace an Ethernet interface module, follow this procedure:



WARNING: To avoid possible electrical shock, the server's power cord must be disconnected from the power source.

- 1** Shut down the server, as described in “Shutting Down”.
- 2** Turn off the server and unplug the power cord from the outlet and the server's power supply receptacle.
- 3** Uncable the Ethernet interface module.
- 4** Remove the module from the slot.
 - a** Remove the two screws.
 - b** Pry the module out of the slot.

Insert the head of a small slotted screwdriver between the bottom of the module and the chassis. Gently pry the module out of the slot. You may feel some resistance as the connectors on the module board pull free of the motherboard.
- 5** Insert the Ethernet interface module into the slot.
 - a** Hold the module with the component side up and the connector mounted on the edge of the board away from you.
 - b** Slowly slide the module into the slot, being careful to align the board edges with the guide rails in the chassis, as shown in Figure 5-3.

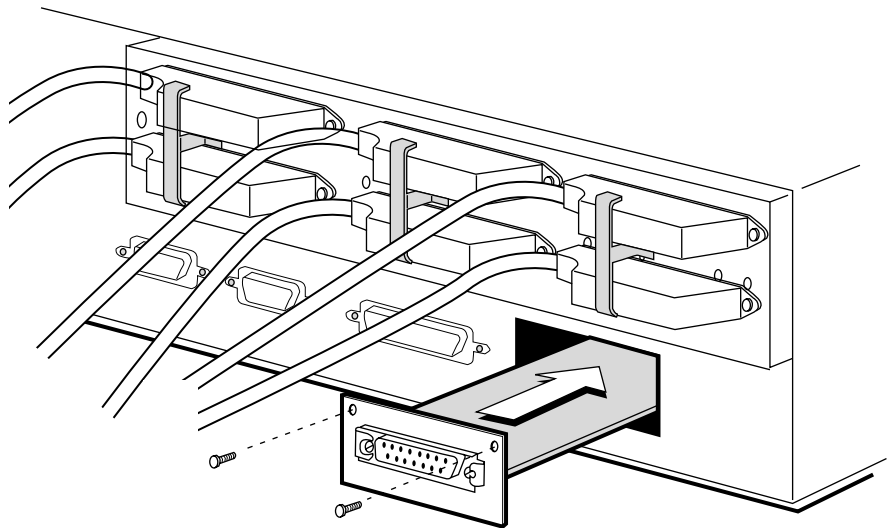


Figure 5-3 Installing the Ethernet Interface Module

- c Continue to slide the module into the slot until you feel a slight resistance.

This resistance is caused by the connector on the board engaging the connector on the motherboard.

- 6 Fasten the module into the chassis with the two screws.

- 7 Recable the module.

For instructions on cabling the Ethernet interface modules, refer to “Cabling Ethernet Interface Modules”.

Upgrades

Upgrade procedures require you to remove the server cover.



CAUTION: *Procedures that involve removing the power supply cover must be performed by service personnel only.*

“Service personnel” means people who have appropriate technical training and experience. Service personnel are aware of hazards they are exposed to and of methods to minimize the danger to themselves and others.

Follow the instructions in this section carefully. If any problems occur, contact 3Com or your authorized service representative immediately.

If the information in release notes shipped with an upgrade kit differs from the information in this guide, follow the release notes.



WARNING: *Do not open the power supply. It contains hazardous voltages. There are no user-serviceable parts inside.*

VORSICHT: *Öffnen Sie niemals das Netzteil. Hochspannung! Es sind keine zu wartenden Teile enthalten.*

AVERTISSEMENT: *Ne pas ouvrir le bloc d'alimentation. Tensions dangereuses à l'intérieur. Ne contient aucune pièce que l'utilisateur puisse réparer.*

PELIGRO: *No abra fuente de alimentacion. Contiene alta tensión. No hay partes para reemplazar adentro.*

Removing the Cover Follow these steps to remove the server cover:

- 1 Shut down the server, as described in “Shutting Down”.



WARNING: *Before removing the cover, be sure the unit is turned off and the power cord is either disengaged from the unit's receptacle or unplugged from the wall socket.*

- 2 If the server is mounted in a rack, remove it from the rack. Remove the rack-mounting brackets from the sides of the server.
- 3 Use a #1 Phillips screwdriver to remove the black screws on the sides of the cover.
- 4 Grasp both sides of the cover and carefully lift it off.

Replacing or Adding a 16-Port Asynchronous Module

The following procedure describes replacing or adding a 16-port asynchronous module to a CS/3000 series server that has already been turned on and has been running communications server software. For instructions on installing a 16-port asynchronous module in a server that has never been turned on, refer to “Installing 16-Port Asynchronous Modules”.

This procedure requires you to handle a 16-port asynchronous module. Whenever you handle one of these modules, adhere to the following ESD guidelines:

- Keep the new module in its antistatic bag until you are ready to install it.
- Do not touch pins, leads, or solder connections on the board.
- Handle the board by the edges only.
- Observe proper grounding techniques, including using a foot strap and grounded mat or wearing a grounded static discharge wrist strap.

You need a #1 and a #2 Phillips screwdriver and a small slotted screwdriver. To replace or add a 16-port asynchronous module, follow this procedure:

- 1 Make sure server power is off and the power cord is unplugged.
- 2 Remove the cover, as described in “Removing the Cover”.

- 3** If you are adding a 16-port asynchronous module, continue with step 4. If you are replacing one or more modules, you need to remove all of them.

- a** Mark all cables to indicate where they connect.
- b** Remove all cable strain relief mechanisms.

Refer to Figure 2-11 on page 2-15 for the location of the cable strain relief mechanism. Remove the screw that fastens the metal bracket to the upper portion of the back panel and remove the bracket.

- c** Uncable all 16-port asynchronous modules.
- d** Remove the screws holding the upper portion of the back panel.

Using the #2 Phillips screwdriver, remove the two screws located toward the outer edges of the panel, as shown in Figure 5-4.

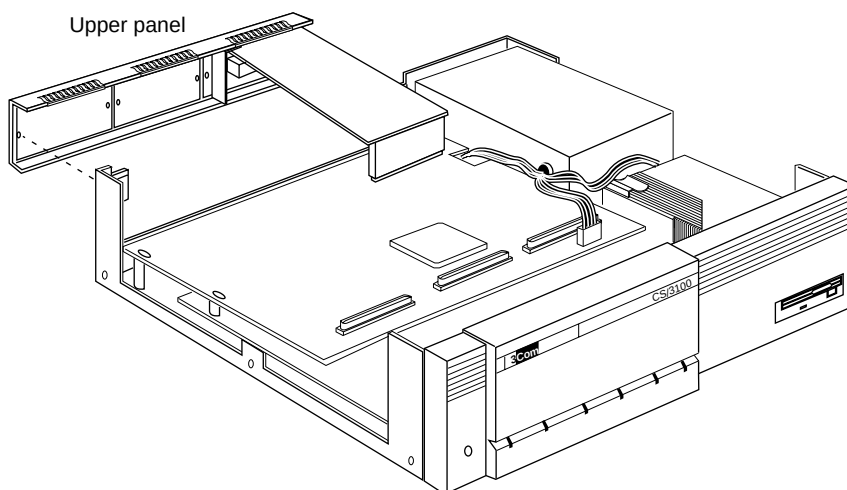


Figure 5-4 Removing Upper Portion of Back Panel

- e** Carefully remove each module from its auxiliary processor board connector.

Grasp the edge of each board and gently pull it up.

- f** Carefully lift the panel with the modules still fastened to it up and away from the rest of the chassis.

Be careful not to loosen the three electromagnetic interference (EMI) clips attached to the upper lip of the panel.

- g** Remove the two screws that fasten the module you want to replace.
Refer to Figure 2-2 on page 2-4 for the location of these screws.
- h** Remove the module.
- 4** Install the replacement or new 16-port asynchronous module.
If you are planning to install fewer than three 16-port asynchronous modules, you must install the first module in the slot closest to the power supply and the second module in the center slot.
 - a** Fasten the module to the panel, using the two screws.
Figure 5-5 shows the correct placement of these screws.
Again, be careful not to loosen the EMI clips.

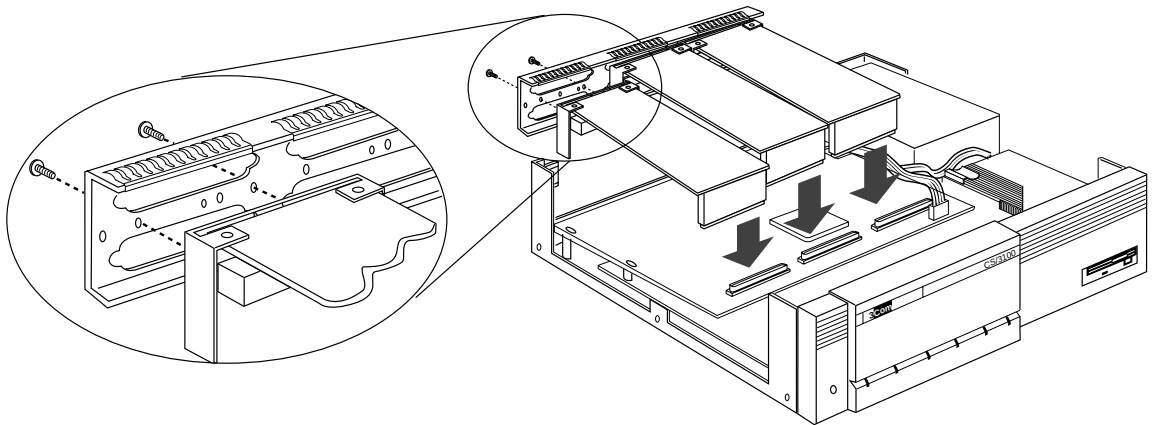


Figure 5-5 Replacing or Adding an 16-Port Asynchronous Module

- b** Position the panel in place, then position the connector on the edge of each module over the corresponding connector on the auxiliary processor board and press down firmly.
To position the panel in place, latch the three integral hooks along the bottom of the panel over the edge of the chassis.
 - c** Fasten the panel with the two screws.
- 5** Replace the cover, as described in “Replacing the Cover”.

Replacing the Diskette Drive

This section explains how to replace the diskette drive (Model CS/3100 only).

You need a #1 and a #2 Phillips screwdriver. Follow this procedure:

- 1 Make sure server power is off and the power cord is unplugged.
- 2 Remove the cover, as described in “Removing the Cover”.
- 3 Disconnect the ribbon cable and power wiring harness from the connectors on the rear of the diskette drive. Fold the cables so they are out of the way.

Figure 5-6 shows the location of the ribbon cable and power wiring harness connectors. Note the orientation of the ribbon cable.

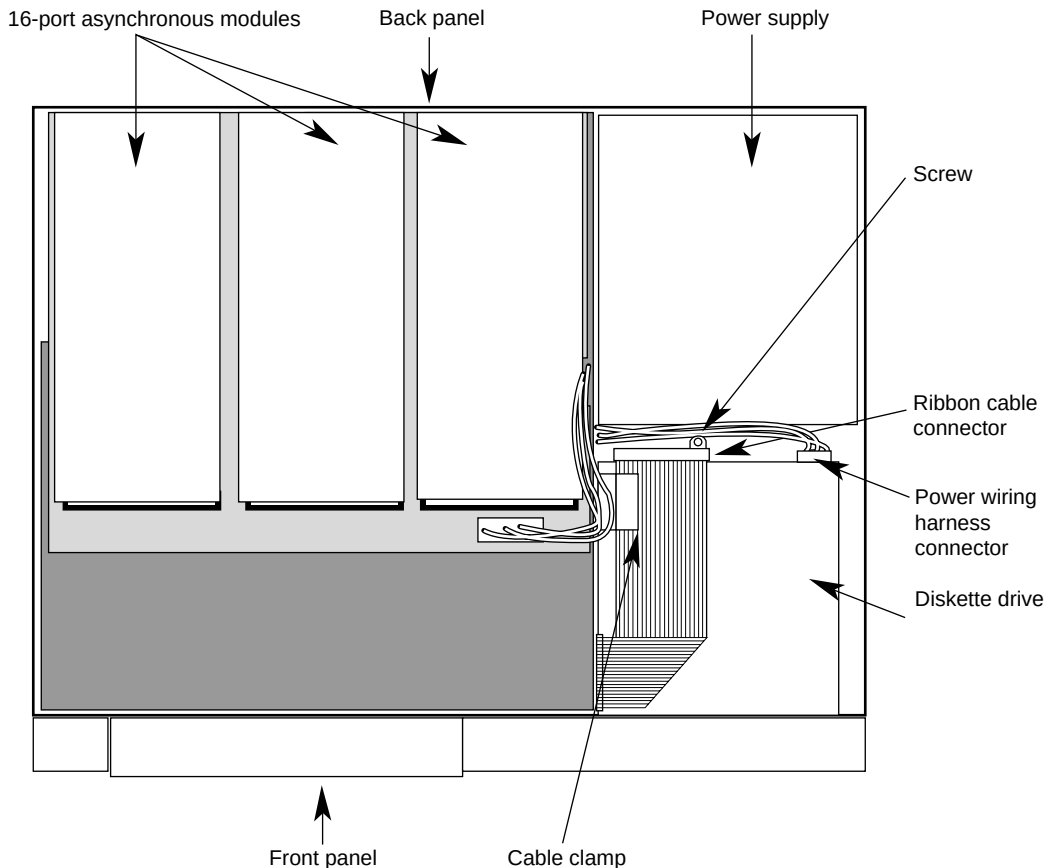


Figure 5-6 Location of Ribbon Cable and Power Wiring Harness Connectors

- 4 Slip the ribbon cable out of the cable clamp.

Figure 5-6 shows the location of the cable clamp.

- 5 Remove the diskette drive from the chassis.

Remove the screw that fastens the diskette drive bracket to the bottom of the chassis. Figure 5-6 shows the location of the screw.

Slide the bracket toward the rear and lift it and the diskette drive out of the chassis. The bottom of the bracket has two keyhole slots that fit over standoffs on the bottom of the chassis. You must slide the bracket far enough to the rear to lift it off the standoffs.

- 6 Transfer the bracket from the original diskette drive to the new one.

- a Remove the four screws (two on each side of the bracket) that hold the diskette drive.
- b Slide the old drive out of the bracket.
- c Slide the new drive into the bracket.
- d Replace the four screws.

- 7 Replace the bracket in the chassis.

- a Slip the keyhole slots on the bottom of the bracket over the standoffs on the bottom of the chassis.
- b Slide the bracket toward the front of the chassis until the front panel of the diskette drive is flush with the opening in the front panel of the chassis.
- c Fasten the bracket to the chassis with the screw.

- 8 Slip the ribbon cable back into the cable clamp.

- 9 Reconnect the ribbon cable and the power wiring harness to the connectors on the rear of the diskette drive.

Be sure to replace the ribbon cable in its original orientation.

- 10 Replace the cover, as described in “Replacing the Cover”.

Replacing the Power Supply

If any component in the power supply module (other than a fuse) fails, you must replace the entire module.



WARNING: Do not open the power supply. It contains hazardous voltages. There are no user-serviceable parts inside.

VORSICHT: Öffnen Sie niemals das Netzteil. Hochspannung! Es sind keine zu wartenden Teile enthalten.

AVERTISSEMENT: Ne pas ouvrir ce bloc d'alimentation. Tensions dangereuses à l'intérieur. Ne contient aucune pièce que l'utilisateur puisse réparer.

PELIGRO: No abra fuente de alimentación. Contiene alta tensión. No hay partes para reemplazar adentro.



WARNING: To avoid possible electrical shock, the server's power cord must be disconnected from the power source before accessing its internal components.

You need a #1 and a #2 Phillips screwdriver. Follow this procedure:

- 1 Make sure server power is off and the power cord is unplugged.
- 2 Remove the cover, as described in "Removing the Cover".
- 3 Disconnect the cable that connects the power supply to the connector on the auxiliary processor board, as shown in Figure 5-7.



In order to show the location of the motherboard connector, Figure 5-7 shows the 16-port asynchronous module closest to the power supply removed. You do not need to remove this module to reach the connector.

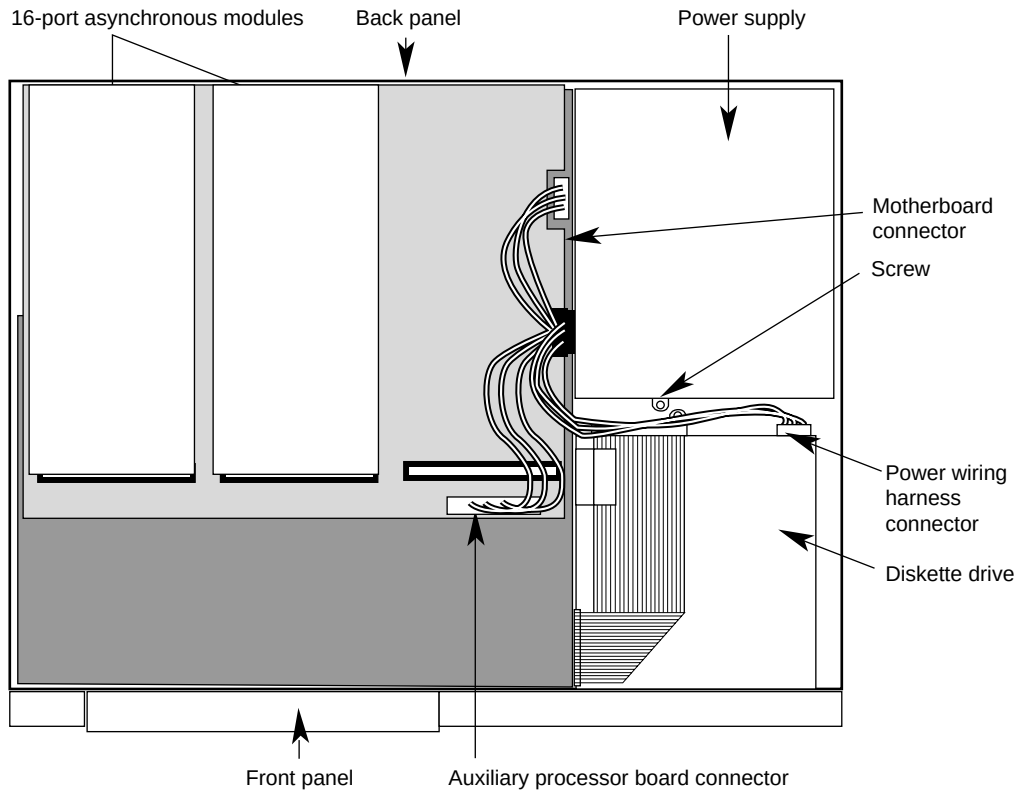


Figure 5-7 Disconnecting Power Supply Cables

4 Remove the power supply.

- a** Remove the screw that fastens the power supply module to the bottom of the chassis.

Figure 5-7 shows the location of the screw.

- b** Slide the power supply module toward the front of the server and lift it partially out.

The bottom of the power supply has two keyhole slots that fit over standoffs located on the bottom of the chassis. You must slide the power supply far enough forward to lift it off the standoffs.

- c** Disconnect the cable that connects the power supply to the connector on the motherboard, as shown in Figure 5-7.

- d For Model CS/3100, disconnect the power wiring harness from the connector on the rear of the diskette drive, as shown in Figure 5-7.
- 5 Install the new power supply module.
 - a Reconnect the power supply cable to the connector on the motherboard.

Make sure you keep the connector keys aligned.
 - b For Model CS/3100 only, reconnect the power wiring harness to the connector on the rear of the diskette drive.
 - c Slip the keyhole slots on the bottom of the power supply module over the standoffs on the bottom of the chassis. Slide the power supply module toward the rear of the chassis.
 - d Fasten the module in place with the screw.
- 6 Reconnect the power supply cable to the connector on the auxiliary processor board.

Make sure you keep the connector keys aligned.
- 7 Replace the cover, as described in “Replacing the Cover”.

Replacing Private Memory Chips

If you ever need to replace memory chips on the motherboard, follow this procedure:

- 1** Make sure server power is off and the power cord is unplugged.
- 2** Remove the cover, as described in “Removing the Cover”.

Figure 5-8 shows the location of private memory chips. These chips are installed in the following slots: U23, U24, U30, U32, U31, U34, U33, U35, U39, U40, U46, U51, U47, U52, U50, and U53.

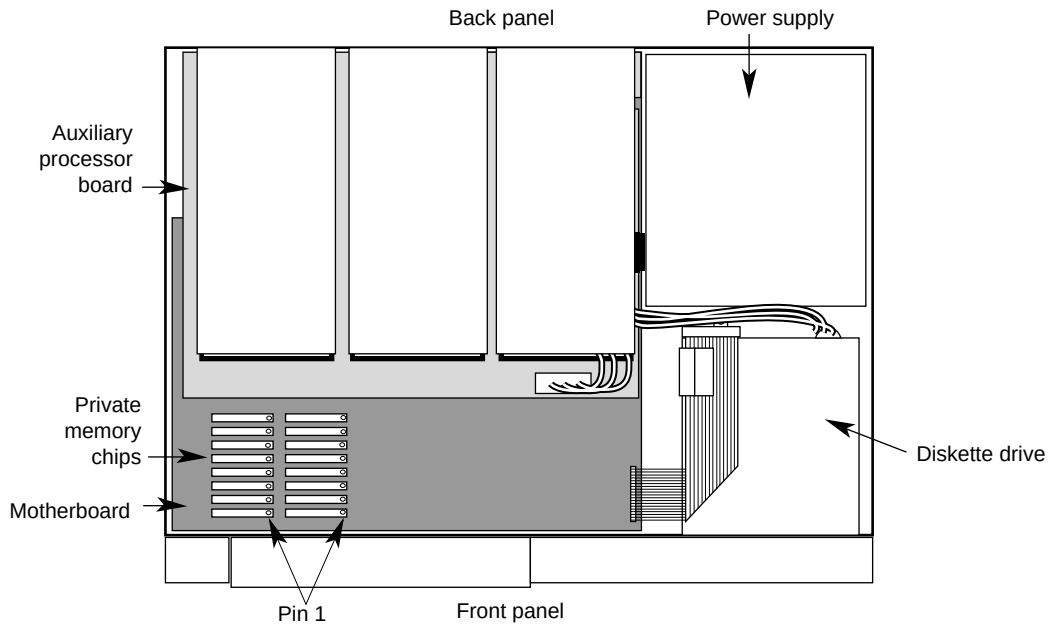


Figure 5-8 Location of Memory Chips on Motherboard

3 Remove the old memory chips that you want to replace.

Using the thumb and forefinger of one or both hands, grasp the front and back of the chip and gently rock it back and forth until it becomes loose. Lift the chip out of its socket.

As you remove the chip, note its orientation. The beveled top edge of the chip faces the right side of the chassis (when viewed from the front of the server).

4 Remove a new memory chip from its antistatic foam shipping pad.

If the pins have been bent, carefully straighten them. Orient the chip with the beveled corner closest to the right of the communications server.

All memory chips must have the same orientation.



CAUTION: Failure to place the memory chips correctly will cause the self-test diagnostics to fail and possible server or memory chip damage when the server is powered on.

- 5 Being careful to line up the pins with the socket, firmly push each memory chip into its socket until it snaps into place.



CAUTION: Be sure that no pins are bent under the body of the chip. Each pin must be inserted properly into its socket.

- 6 Repeat steps 4 and 5 for the remaining chips.
- 7 Replace the cover, as described in “Replacing the Cover”.

Replacing the EPROM

To replace the EPROM on the motherboard, follow this procedure:

- 1 Make sure server power is off and the power cord is unplugged.
- 2 Remove the cover, as described in “Removing the Cover”.

The EPROM is located in slot U19, as shown in Figure 5-9.

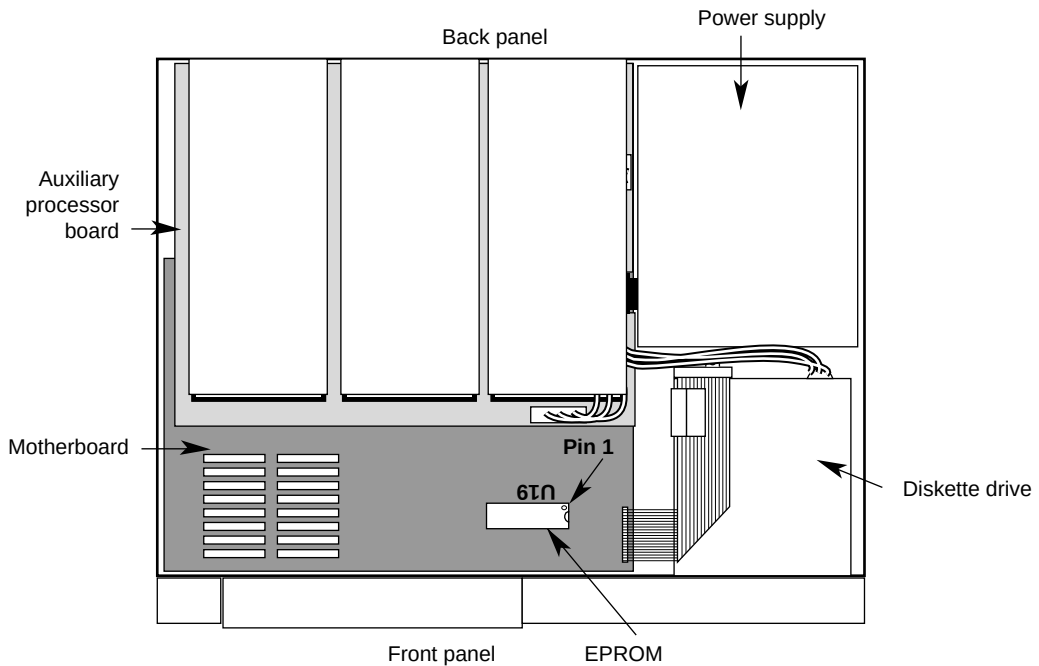


Figure 5-9 Location of EPROM on Motherboard

3 Remove the EPROM from the motherboard.

Using a small slotted screwdriver or an EPROM-pulling tool, carefully pry the old EPROM out of its socket, making sure not to bend the pins.

As you are removing the EPROM, note its orientation. The notched edge is toward the right (when viewed from the front of the server).

4 Place the old EPROM in the antistatic foam pad.

Keep the old EPROM until the server has been powered up and tested with the new firmware. Refer to Appendix B, "Startup Messages."

5 Remove the new EPROM from its antistatic foam shipping pad.

If the pins have been bent, carefully push the side of the EPROM against a flat antistatic surface so that the pins are at right angles to the body and fit easily into the sockets. Orient the new EPROM in the same way as the old EPROM.



CAUTION: *Failure to orient the EPROM correctly will destroy it when the server is powered on.*

6 Being careful to line up the pins with the socket, firmly push the new EPROM into its socket until it snaps into place.



CAUTION: *Be sure that no pins are bent under the body of the EPROM. Each pin must be inserted properly into its socket.*

7 Replace the cover, as described in the next section.

Replacing the Cover

When you have finished the upgrade or servicing, always replace the server's cover before plugging it in.



WARNING: *To avoid a fire hazard, always replace the cover. Powering on the server without a cover can cause it to overheat. This will void the warranty.*

To replace the cover, do the following:

1 Make sure all three EMI clips are attached to the upper lip of the back panel.

2 Place the cover on the chassis.

To ensure correct placement, be sure that the panel with the greater number of ventilation holes is positioned on the left side (viewed from the front of the server).

3 Using the #1 Phillips screwdriver, tighten the screws on each side of the cover until snug. Do not overtighten.

If you are remounting the server in a rack, replace the middle screw only. If you are mounting the server on a tabletop, replace all three screws.

4 Recable any connectors whose cables have been removed.**5** Reinstall any strain reliefs that have been removed.

Figure 2-11 on page 2-15 shows how the strain relief mechanism is installed.

6 If your server was mounted in a rack, replace the rack-mounting brackets on the sides of the server and remount the server in the rack.

Refer to Figure 2-4 on page 2-8 to see how the server is mounted in a rack.

7 Make sure the AC power switch is in the O or off position.**8** Attach the power cord to the receptacle on the back panel.**9** Plug the other end of the power cable into an AC power source.**10** Power on the server.

6

TROUBLESHOOTING

If your communications server does not start up as described in Chapter 3, “Startup,” or fails during operation, review the following troubleshooting hints. If you cannot solve the problem, contact 3Com or your network supplier. Refer to Appendix D, *Technical Support*, for technical support information.

Startup Problems

This section lists problems the CS/3000 series server can experience during its startup sequence (self-test and boot processes). These problems are indicated by abnormal behavior of front-panel LEDs or by error messages on the console.

Symptom At initial power-on or during a reset, Power and Self Test LEDs fail to light.

Meaning There is no power to the server.

Action Turn off the server by pressing the O side of the power switch, then:

- 1 Verify that the power cord is plugged securely into the power supply module.
- 2 Verify that the power cord is connected to an outlet.
- 3 Ensure that power is available at the outlet you are using.
- 4 Inspect the server's fuse and replace it, if necessary. For instructions, refer to “Replacing the Fuse”.
- 5 Try replacing the power cord.

If the Power and Self Test LEDs still fail to light, contact 3Com or your network supplier.

Symptom During self-tests, the Self Test LED remains on for three minutes or longer or the console displays an error message.

Meaning The server has failed a self-test.

Action The server may not always be able to report a failure on the console (for example, CPU failure). If a lighted Self Test LED is the only symptom, contact 3Com or your networked with the motherboard or auxiliary processor board, contact 3Com or your network supplier. If the error is associated with a 16-port asynchronous module, replace the module. For information on replacing the module, refer to Chapter 5, "Maintenance and Upgrades." If the problem persists, contact 3Com or your network supplier.

Symptom The Boot State LED goes on and off cyclically.

Meaning The boot source is "Monitor" and there is no terminal connected to the console port.

Action Connect a terminal to the console port. Enter **bt** to boot from diskette (Model CS/3100 only) or **bs** to boot from the network.

Symptom Boot fails and the monitor prompt appears on the console.

Action Take the following action:

- 1** If you are booting from a network, make sure that your network is operational and that the communications server is configured to use the network boot source.
- 2** When you are prompted to enter the monitor, type **N** to retry the boot sequence.
- 3** If the problem happens again, type **Y** to access the monitor.
- 4** At the **>** prompt, enter **bt** to boot from diskette (use the original software distribution diskette rather than your working diskette) or **bs** to boot from the network.

If the boot succeeds and your boot source is a diskette, make a new copy of your software distribution diskette using the procedure in "Copying and Formatting Diskettes". Otherwise, refer to Chapter 4, "Configuration," to check the configuration of the Initial Boot Source parameter.

- 5** If the problem persists, contact 3Com or your network supplier.

Operating Problems

This section lists problems the CS/3000 series server can experience while it is running multiprotocol communications server software. These problems are indicated by abnormal behavior of front-panel LEDs or by error messages on the console.

Symptom The Self Test LED flashes continually or the Boot State LED remains on during software operation.

Meaning A flashing Self Test LED indicates a software failure. A lighted Boot State LED indicates a hardware failure.

Action In either event, take the following action:

- 1** Reset the server by pressing the reset switch.
- 2** If the problem persists, perform the following steps:
 - a** Using a nonconductive object such as a plastic stylus, press the hardware interrupt switch.

The hardware interrupt switch is located on the server's left side (viewed from the front of the server) close to the front, as shown in Figure 1-1 on page 1-3. The switch is recessed to protect it from being pressed unintentionally.



WARNING: Use only a nonconductive object such as a plastic stylus to press the hardware interrupt switch. Do not use the tip of a pencil. Graphite particles can cause electrical shock to the operator and can damage components on the server's circuit boards.

Pressing this switch aborts software operation and passes control of the server to the monitor utility.

- b** At the `>` prompt, enter **k**.
Entering this command performs a soft reset.
- c** Enter **fc**.
The Firmware Configuration Utility menu appears.
- d** Type **d** to display parameters.

If your boot source is a diskette, check the Initial Boot Source parameter. If your boot source is the network, check the settings of Initial Boot Source, Network Boot String, Boot Protocol, and Change IP/TFTP

Parameters (for example, the IP addresses configured in firmware should match the IP addresses of actual devices).

If you need to reconfigure a setting, refer to “Changing the Configuration”.

- 3 If the problems persists, contact 3Com or your network supplier.

Symptom The communications server experiences one or more of these symptoms:

- Data Received, Packet Received, and Network Activity LEDs do not indicate any activity, despite being connected to an operational network.
- The console display freezes, and nothing happens when you press the Return key.
- When you try to access the server management interface from a terminal or a remote location, the server fails to acknowledge the connection attempt.

Meaning A server or Ethernet interface module failure has occurred, or the module is not receiving packets from the network.

Action Take the following action:

- 1 Reset the server by pressing the reset switch on the front panel.
- 2 If resetting the server does not resolve the problem, check the cable, transceiver, and any other devices associated with connecting the Ethernet interface module to the network.

Replace any faulty component. If you do not find any faulty network connection components or if you replace a component but the problem recurs, replace the Ethernet interface module, as described in “Replacing an Ethernet Interface Module”.

- 3 If the problem persists, contact your network supplier.

Ethernet Interface Module Problems

This section lists problems the single-port AUI or RJ-45 Ethernet interface module can experience while the CS/3000 series server is powered on and running communications server software. These problems are indicated by abnormal behavior of front-panel LEDs or Ethernet module LEDs. Front-panel LED symptoms are described under “Operating Problems”.

- Symptom* The Activity LED on the single-port RJ-45 module does not indicate any activity, despite being connected to an operational network.
- Meaning* The cable that connects the module's port to the network may be shorted or damaged, or you may have installed the wrong type of cable.
- Action* Take the following action:
- 1** Check the cable for any signs of shorting or damage.
Replace the cable if necessary.
 - 2** Check "Installing Ethernet Interface Modules" to make sure that you have installed the right cable for your module.
 - 3** If the Activity LED remains off, contact your network supplier.
- Symptom* The Link LED on the single-port RJ-45 module fails to light.
- Meaning* There is no connection between the module's port and the workstation, hub, or repeater.
- Action* Take the following action:
- 1** Make sure the cable is properly wired.
Refer to "Wiring Considerations". If the cable is improperly wired, replace it.
 - 2** Make sure that all network connections are secure.
 - 3** If these steps do not solve your problem, replace your Ethernet interface module, as described in "Replacing an Ethernet Interface Module".
 - 4** If the symptom persists, contact 3Com or your network supplier.
- Symptom* The Polarity LED on the single-port RJ-45 module remains on.
- Meaning* The twisted-pair cable's polarity is reversed.
- Action* If the cable is improperly wired, replace it. Refer to "Wiring Considerations" for additional information.

Memory Dump Procedures

If the communications server fails during operation, you can write the contents of the server's CPU registers and RAM to an RBCS or TFTP/FTP server, or to diskettes. This procedure is called a memory dump.

The memory dump procedure depends on the communications server's configuration. For example, if Auto-Reboot in the firmware configuration is set for "Upload then reboot," the memory dump to the network is automatic. If Auto-Reboot is set to "Boot monitor," the communications server enters the monitor and waits for commands. You must attach a terminal to the console port and enter the upload command **up** to dump memory to the network, or **du** to dump it to diskettes. If Auto-Reboot is set to "Reboot," no memory dump is performed, and the contents of memory are overwritten.

A communications server crash is also reported in the audit trail. Technical support staff can use audit trail and memory dump information to diagnose the cause of the crash.

Dumping Memory to an RBCS Server

To write a memory dump to the RBCS server, you must set the boot protocol to TFTP and establish a safepath on the RBCS server. The default safepath is to the data/DUMP directory. If this directory is not already present on the RBCS server, you must create it for the memory dump. If you specify a different path for the TFTP Upload Path parameter, the memory dump uses that path. For more information on the RBCS safepath function, refer to the *Remote Boot and Configuration Services User's Guide* or release notes. For information about the TFTP Upload Path parameter, refer to Table 4-3.

Dumping Memory to a TFTP Host

To write a memory dump to a TFTP host, you must set the boot protocol to TFTP, and the TFTP Upload Path parameter in the firmware configuration must indicate where the dump should be written onto the host. Refer to your TFTP server documentation to determine the appropriate directory. For information about the TFTP Upload Path parameter, refer to Table 4-3.

Dumping Memory to Diskettes

You can dump memory to the communications server's diskette drive only if the Auto-Reboot option has been disabled before the crash, and if the reset switch on the server's front panel has not been pressed. Use the Firmware Configuration Utility to set the Auto-Reboot parameter to "Boot

monitor,” as described in Chapter 4, “Configuration.” If this parameter is set to “Reboot only,” the communications server reboots automatically after a failure, overwriting RAM. If it is set to “Upload then reboot” the communications server does not allow a memory dump to be written to a diskette.

To write a memory dump to the CS/3100 diskette, you need six or more high-density (2 MB) 3.5-inch diskettes (1.44 MB formatted). You do not need to format the diskettes. The **du** command automatically performs this step.

The memory dump procedure reinitializes the monitor and saves the contents of memory. To write the memory contents to diskette, follow these steps:

- 1** Enter monitor mode, as explained in “Entering the Firmware Monitor”.

In some instances, a crash may leave the disk drive unusable because some monitor parameters were overwritten. In this case, the server may respond with an error message. To recover, enter the soft reset command:

k

- 2** From the console, enter the dump command:

du

The server prompts you with the following:

```
Enter the density of the dump diskettes
Escape to abort the dump
Return to use the default density (2mb):
```

- 3** Press the Return key to select the default, 2 MB (high-density).

The server then calculates the number of diskettes required for the memory dump, and displays the following message:

```
***N diskette(s) will be needed for the dump operation***
Diskettes will be formatted prior to writing
Insert a diskette
Hit any key to continue
Escape to abort the operation
```

4 Insert the first diskette.

The server formats the disk, writes the memory dump to the diskette, and displays the following message:

```
Writing...Label this disk #1
Insert the next dump disk
Hit any key to continue
Escape to abort the operation
```

5 Follow the prompts and insert disks, labeling them accordingly.

The server formats each disk individually, then writes the memory dump to that disk. The process continues until all diskettes have been formatted and written to, and the memory dump is complete. The server then displays the following prompt:

```
Dump completed
```

Sending in the Memory Dump

Contact your network supplier or 3Com Customer Support before sending a memory dump from your communications server.

Send the following information along with the diskettes:

- The date and time at which the crash occurred and any information available about the network traffic load at that time
- The state of each front panel LED indicator at the time of the crash
- The version numbers of your communications server software and firmware

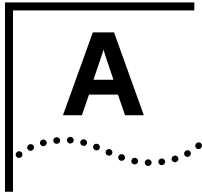
You can obtain this information after completing the memory dump. To find the version numbers, boot the software and enter the **SHoW -SYS VERSion** command. This command provides both the software version string and the firmware version number. If the software fails to boot, the firmware version number appears in the power-up message when a console is attached and Monitor is enabled. Press the front panel reset button to obtain this message.

- The transceiver brand name and model number
- How much of the server is affected (that is, a single port, several ports, or the entire unit)
- A description of any symptoms present before the crash

- The text of any error messages that appeared on the console at the time of the crash (if a console was attached)
- The text of any error messages that appeared on the console during any step of the dump procedure, and a description of any action taken to recover from the error (for example, skipped the step, repeated the step successfully)
- The frequency of the problem

You may also be asked to send a copy of the working diskette (Model CS/3100 only) or a copy of the communications server software loaded on the hard disk of your RBCS or TFTP/FTP server. To make a copy of the working diskette, follow the procedure in “Copying and Formatting Diskettes”.

Restarting To reboot the server after a memory dump, enter **bt** to boot from the working diskette (Model CS/3100 only) or **bs** to boot from an RBCS or TFTP/FTP server.



PIN ASSIGNMENTS

This appendix lists pin assignments for the following connectors:

- Serial connectors (16-port asynchronous module)
- AUI port (single-port AUI module)
- RJ-45 port (single-port RJ-45 module)
- Console port
- Parallel printer port
- D-type adapters

Serial Connectors

CS/3000 series servers provide up to 48 serial ports, depending on the number of 16-port asynchronous modules installed. Each module provides two 50-pin serial connectors; each connector provides eight ports. You can install up to three modules.

SW/3000 software refers to these ports as port numbers 0 through 47. Table A-1 shows the mapping of ports to 50-pin connectors.

Table A-1 Connector-Port Mapping

Connector	Ports
J10	0–7
J11	8–15
J12	16–23
J13	24–31
J14	32–39
J15	40–47

Figure A-1 shows pin numbers for serial connectors on the 16-port asynchronous module.

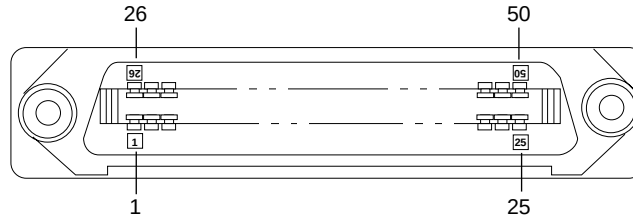


Figure A-1 Serial Connector Pin Numbering

The communications server acts as a DCE device. The 50 pins in each serial connector correspond to eight DCE ports. Port 0, for instance, consists of pins 1, 2, 3, 26, 27, and 28; port 1 consists of pins 4, 5, 6, 29, 30, and 31; and so on. The circuit assignments for pins on the serial connector depend both on the software version running on the communications server and on the software configuration.

Software Version 6.0

Table A-2 shows circuit assignments for software version 6.0 (including 6.0.2). In these versions, DTR and RTS share pin 1 on port 0 (and also pins 4, 7, 10, 13, 16, 19, and 22 on the other ports). DCD and CTS share pin 28 on port 0 (and also pins 31, 34, 37, 40, 43, 46, and 49 on the other ports). This hardware configuration is called *single-input*.

In the default software configuration, pin 1 functions as DTR (to signal the communications server to disconnect) and pin 28 functions as DCD (to signal when a hangup has occurred). This configuration is referred to as *session control*. Flow control, if needed, must be provided by software. In the default software configuration, the -TERM FlowCtrlFrom and FlowCtrlTo parameters are set to Xon_Xoff. These parameters can also be set to Enq_Ack or to None without changing the circuit assignments.

In this software version, you can configure CTS/RTS hardware flow control by setting FlowCtrlFrom and FlowCtrlTo to CTS_RTS. In this configuration, pins 1 and 28 (and the corresponding pins on other ports) act as RTS and CTS, not as DTR and DCD.

Table A-2 Serial Connector Pin Assignments, Software Version 6.0

Port	Pin	Signal	Direction	Pin	Signal	Direction
0	1	DTR0/RTS0	In	26	TXD0	In
0	2	SG0	—	27	RXD0	Out
0	3	Not used	—	28	DCD0/CTS0	Out
1	4	DTR1/RTS1	In	29	TXD1	In
1	5	SG1	—	30	RXD1	Out
1	6	Not used	—	31	DCD1/CTS1	Out
2	7	DTR2/RTS2	In	32	TXD2	In
2	8	SG2	—	33	RXD2	Out
2	9	Not used	—	34	DCD2/CTS2	Out
3	10	DTR3/RTS3	In	35	TXD3	In
3	11	SG3	—	36	RXD3	Out
3	12	Not used	—	37	DCD3/CTS3	Out
4	13	DTR4/RTS4	In	38	TXD4	In
4	14	SG4	—	39	RXD4	Out
4	15	Not used	—	40	DCD4/CTS4	Out
5	16	DTR5/RTS5	In	41	TXD5	In
5	17	SG5	—	42	RXD5	Out
5	18	Not used	—	43	DCD5/CTS5	Out
6	19	DTR6/RTS6	In	44	TXD6	In
6	20	SG6	—	45	RXD6	Out
6	21	Not used	—	46	DCD6/CTS6	Out
7	22	DTR7/RTS7	In	47	TXD7	In
7	23	SG7	—	48	RXD7	Out
7	24	Not used	—	49	DCD7/CTS7	Out
None	25	Not used	—	50	Not used	—

Software Version 6.1 and Later

Software version 6.1 and later can assign DTR to pins 3, 6, 9, 12, 15, 18, 21, and 24, which are not used by earlier software versions. RTS remains on pins 1, 4, 7, 10, 13, 16, 19, and 22. Separating the DTR and RTS inputs allows an attached device to use RTS flow control and still use DTR to signal the communications server to disconnect. This hardware configuration is called *dual-input*.

Input pin selection and signal interpretation are controlled by the `-TERM UseDTRin` parameter. If this parameter is set to `OnRTS`, then DTR and RTS share the same signal. This behavior is identical to earlier software and is the default. In this case the circuit assignments in Table A-2 still hold.

If UseDTRin is set to OnDTR, then pin 1 is interpreted only as RTS, and pin 3 is interpreted as DTR, as shown in Table A-3. The behavior of the single output control signal (pin 28) has not changed. If FlowCtrlFrom is set to CTS_RTS, the signal is used as CTS to flow-control the attached device. If not, the signal behaves as DCD according to the configuration of the -TERM UseDCDout parameter. For further information, refer to the *Multiprotocol Communications Software Reference Guide* and your software release notes.

Table A-3 Serial Connector Pin Assignments, Software Version 6.1

Port	Pin	Signal	Direction	Pin	Signal	Direction
0	1	RTS0	In	26	TXD0	In
0	2	SG0	—	27	RXD0	Out
0	3	DTR	—	28	DCD0/CTS0	Out
1	4	RTS1	In	29	TXD1	In
1	5	SG1	—	30	RXD1	Out
1	6	DTR	—	31	DCD1/CTS1	Out
2	7	RTS2	In	32	TXD2	In
2	8	SG2	—	33	RXD2	Out
2	9	DTR	—	34	DCD2/CTS2	Out
3	10	RTS3	In	35	TXD3	In
3	11	SG3	—	36	RXD3	Out
3	12	DTR	—	37	DCD3/CTS3	Out
4	13	RTS4	In	38	TXD4	In
4	14	SG4	—	39	RXD4	Out
4	15	DTR	—	40	DCD4/CTS4	Out
5	16	RTS5	In	41	TXD5	In
5	17	SG5	—	42	RXD5	Out
5	18	DTR	—	43	DCD5/CTS5	Out
6	19	RTS6	In	44	TXD6	In
6	20	SG6	—	45	RXD6	Out
6	21	DTR	—	46	DCD6/CTS6	Out
7	22	RTS7	In	47	TXD7	In
7	23	SG7	—	48	RXD7	Out
7	24	DTR	—	49	DCD7/CTS7	Out
None	25	Not used	—	50	Not used	—

Fanning out the Telco Connector

You can fan out the eight ports of the Telco connector to eight 8-pin RJ-45 jacks using a patch panel (described in “Patch Panel”) or to eight 6-pin RJ-12 jacks using an octopus (hydra) cable (described in “Octopus (Hydra) Cable”). The resulting pin numbers are shown in Table A-4. For signal names and directions, refer to Table A-2 and Table A-3.

Table A-4 Telco-to-RJ-12 Pin Assignments

Port	Pin	RJ-45 Pin, Patch Panel	RJ-12 Pin, Hydra Cable	Pin	RJ-45 Pin, Patch Panel	RJ-12 Pin, Hydra Cable
0	1	4	3	26	5	4
0	2	6	5	27	3	2
0	3	7	6	28	2	1
1	4	4	3	29	5	4
1	5	6	5	30	3	2
1	6	7	6	31	2	1
2	7	4	3	32	5	4
2	8	6	5	33	3	2
2	9	7	6	34	2	1
3	10	4	3	35	5	4
3	11	6	5	36	3	2
3	12	7	6	37	2	1
4	13	4	3	38	5	4
4	14	6	5	39	3	2
4	15	7	6	40	2	1
5	16	4	3	41	5	4
5	17	6	5	42	3	2
5	18	7	6	43	2	1
6	19	4	3	44	5	4
6	20	6	5	45	3	2
6	21	7	6	46	2	1
7	22	4	3	47	5	4
7	23	6	5	48	3	2
7	24	7	6	49	2	1
None	25	Not used	Not used	50	Not used	Not used

AUI Port

Figure A-2 shows pin numbers for the AUI port on the single-port AUI module. Table A-5 lists pin assignments for the AUI port. This connector is an industry standard derived from IEEE Standard 802.3.

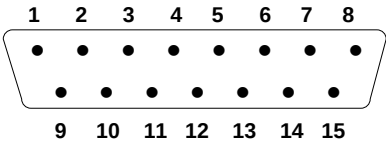


Figure A-2 AUI Port Pin Numbers

Table A-5 AUI Port Pin Assignments

Pin Number	Function	Signal
1	Signal ground	SG
2	Carrier detect (plus)	DCD+
3	Transmit (plus)	TXD+
4	Signal ground	SG
5	Receive (plus)	RXD+
6	Signal ground	SG
7	Control out (plus)	CTL OUT+
8	Signal ground	SG
9	Carrier detect (minus)	DCD-
10	Transmit (plus)	TXD-
11	Signal ground	SG
12	Receive (minus)	RXD-
13	+12V	+12V
14	Signal ground	SG
15	Control out (minus)	CTL OUT-

RJ-45 Port

Figure A-3 shows pin numbers for the RJ-45 port on the single-port RJ-45 (10BASE-T) module. Table A-6 lists pin assignments for this port.

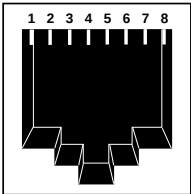


Figure A-3 RJ-45 Port Pin Numbers

Table A-6 RJ-45 Port Pin Assignments

Pin Number	Function	Signal
1	Transmit data (plus)	TXD+
2	Transmit data (minus)	TXD-
3	Receive data (plus)	RXD+
4, 5	Not connected	NC
6	Receive data (minus)	RXD-
7, 8	Not connected	NC

Console Port

Figure A-4 shows pin numbers for the console port on the server's back panel. Table A-7 lists pin assignments. This port is a DB-9 male connector based on the 9-pin IBM PC AT standard, and is configured as data terminal equipment (DTE). To connect a terminal or other DTE device, use a null modem cable. To connect a modem or other data communications equipment (DCE), use a modem cable.

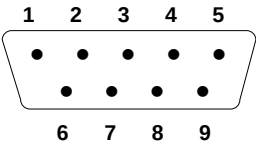


Figure A-4 Console Port Pin Numbers

Table A-7 Console Port Pin Assignments

Pin Number	Function	Signal
1	Carrier detect	DCD
2	Receive data	RXD
3	Transmit data	TXD
4	Data terminal ready	DTR
5	Signal ground	SG
6	Data set ready	DSR
7	Request to send	RTS
8	Clear to send	CTS
9	Not used	NU

Parallel Printer Port

CS/3000 series servers include a female printer port (labeled “Parallel Printer”) for connecting the server to Centronics-type parallel printers. Figure A-5 shows pin numbering for the printer port. Table A-8 lists pin assignments for this port. The table shows pin assignments for both the server interface and the printer connector interface.

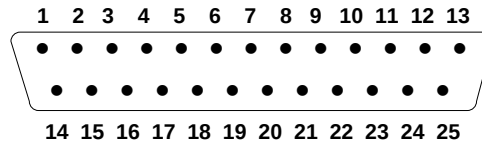


Figure A-5 Printer Port Pin Numbers

Table A-8 Printer Port Pin Assignments

Pin Number (Server Interface)	Pin Number (Printer Interface)	Signal	Source	Description
1	1	Strobe	Server	—
2	2	Data1	Server	Data Bit 0
3	3	Data2	Server	Data Bit 1
4	4	Data3	Server	Data Bit 2
5	5	Data4	Server	Data Bit 3
6	6	Data5	Server	Data Bit 4
7	7	Data6	Server	Data Bit 5
8	8	Data7	Server	Data Bit 6
9	9	Data8	Server	Data Bit 7
10	10	Acknowledge	Printer	—
11	11	Busy	Printer	—
12	12	Out of paper	Printer	—
13	13	SLCT	Printer	—
14	14	Unassigned	—	—
15	32	Error	Printer	—
16	31	Initialize	Server	—
17	36	Unassigned	—	—
18	33	Signal ground	—	—
19	19	Signal ground	—	—
20	21	Signal ground	—	—
21	23	Signal ground	—	—
22	25	Signal ground	—	—
23–25	—	Signal ground	—	—

D-Type Adapters

D-type adapters provide the connection between a patch panel or octopus (hydra) cable that uses RJ-12 or RJ-45 jacks and a modem (DCE) or a terminal, host, or printer (DTE) that uses a 25-pin RS-232 connector. The adapter that you need depends on whether you use a single-input configuration or a dual-input configuration.

Single-Input Configuration

In this configuration, described in “Software Version 6.0”, DTR and RTS share pin 1. This configuration is used by software version 6.0, and by versions 6.1 and later if -TERM UseDTRin is set to OnRTS (the default). You can configure either session control or RTS/CTS flow control, but not both.

Table A-9 shows MOD-TAP part numbers for D-type adapters recommended for single-input configurations.

Table A-9 MOD-TAP D-Type Adapters for Single-Input Configurations

Adapter Type	Male	Female	Color
DCE	06-888-555-31	—	Blue/red
DTE	06-888-260-20	06-988-260-20	White/slate

Table A-10 shows pin assignments for the DCE adapter, used for attachment to a modem. Table A-11 shows pin assignments for the DTE adapters, used for attachment to a terminal, host, or printer. These pin assignments apply only when the adapters are used in conjunction with the following octopus (hydra) cables:

- 2-ft (0.6-m) octopus (hydra) cable, 3Com part number 3C6102
- 4-ft (1.2-m) octopus (hydra) cable, MOD-TAP part number 24-466-10
- 6-ft (1.8-m) octopus (hydra) cable, MOD-TAP part number 24-666-10

Table A-10 and Table A-11 describe adapter connections between RJ-12 pins and DB-25 pins. Many RS-232 interface adapters provide connections to RJ-45 cables rather than RJ-12 cables. You can use an RJ-12 cable with an RJ-45 adapter, fitting the 6-pin RJ-12 plug into the middle six pins of the 8-pin jack. In this case, RJ-45 pins 1 and 8 are not connected, and RJ-12 pins 1 through 6 correspond to RJ-45 pins 2 through 7.

Table A-10 D-Type Adapter Pin Assignments for Attachment to DCE

Session Control				RTS/CTS Flow Control			
RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin	RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin
1	DCD out	RTS/DTR in	4-20	1	CTS out	RTS in	4
2	RXD out	TXD in	2	2	RXD out	TXD in	2
3	DTR in	DCD out	8	3	RTS in	CTS out	5
4	TXD in	RXD out	3	4	TXD in	RXD out	3
5	SG	SG	7	5	SG	SG	7
6	Not used	DSR*	6	6	Not used	—	—
						DSR/DTR	(6-20) [†]

* CS/3000 series servers ignore this signal.

† Pin numbers in parentheses indicate loopback connections that may be necessary for some devices. The prewired adapters listed in Table A-9 include all loopback connections.

Table A-11 D-Type Adapter Pin Assignments for Attachment to DTE

Session Control				RTS/CTS Flow Control			
RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin	RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin
1	DCD out	DSR/DCD in	6-8	1	CTS out	CTS in	5
2	RXD out	RXD in	3	2	RXD out	RXD in	3
3	DTR in	DTR out	20	3	RTS in	RTS out	4
4	TXD in	TXD out	2	4	TXD in	TXD out	2
5	SG	SG	7	5	SG	SG	7
6	Not used	Not used	—	6	Not used	—	—
		DTR/CTS	4-5			DSR/DCD/DTR	(6-8-20)*

* Pin numbers in parentheses indicate loopback connections that may be necessary for some devices. The prewired adapters listed in Table A-9 include all loopback connections.

Dual-Input Configuration

SW/3000 software version 6.1 and later allows the use of both input control signals, enabling input DTR detection (for modem hangup) to be used at the same time as input RTS detection (for hardware flow control). This dual-input configuration is described in “Software Version 6.1 and Later”.

Use of both input control lines requires the use of specially wired adapters. Table A-12 shows part numbers for MOD-TAP adapters prewired for this purpose. Table A-13 and Table A-14 show pin assignments for these adapters. Behavior of the control output (RJ-12 pin 1) is determined by the -TERM FlowCtrlFrom and UseDCDout software parameters, while interpretation of the control inputs (RJ-12 pins 3 and 6) is determined by FlowCtrlTo and UseDTRin.

Table A-12 MOD-TAP D-Type Adapters for Dual Input

Adapter Type	Male	Female	Color
DCE Dial-In	06-886-H6131	06-986-H6131	Blue/red
DTE Dial-In	06-886-H6220	06-986-H6220	White/slate
DCE Dial-Out	06-886-H6331	06-986-H6331	Blue/red
DTE Dial-Out	06-886-H6420	06-986-H6420	White/slate

Table A-13 Dual-Input Dial-In (Bidirectional Flow Control)

DCE Attachment				DTE Attachment			
RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin	RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin
1	CTS out	RTS in	4	1	CTS out	CTS in	5
2	RXD out	TXD in	2	2	RXD out	RXD in	3
3	RTS in	CTS out	5	3	RTS in	RTS out	4
4	TXD in	RXD out	3	4	TXD in	TXD out	2
5	SG	SG	7	5	SG	SG	7
6	DTR in	DCD out	8	6	DTR in	DTR out	20
		DSR/DTR	(6-20)*			DSR/DCD/DTR	(6-8-20)*

* Pin numbers in parentheses indicate loopback connections that may be necessary for some devices. The prewired adapters listed in Table A-12 include all loopback connections.

Table A-14 Dual-Input Dial-Out (Unidirectional Flow Control)

DCE Attachment				DTE Attachment			
RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin	RJ-12 Pin	CS Signal	RS-232 Signal	RS-232 Pin
1	DCD out	RTS/DTR in	4-20	1	DCD out	DSR/DCD in	6-8
2	RXD out	TXD in	2	2	RXD out	RXD in	3
3	RTS in	CTS out	5	3	RTS in	RTS out	4
4	TXD in	RXD out	3	4	TXD in	TXD out	2
5	SG	SG	7	5	SG	SG	7
6	DTR in	DCD out	8	6	DTR in	DTR out	20
						DTR/CTS	(20-5)*

* Pin numbers in parentheses indicate loopback connections that may be necessary for some devices. The prewired adapters listed in Table A-12 include all loopback connections.

Replacing a CS/1 Server

If you are replacing a CS/1 server with a CS/3000 series server, you can use an adapter cable between the CS/3000 series server and your existing CS/1 cables. Figure A-6 shows typical CS/1 cabling applications and the location of the adapter cable in each application.

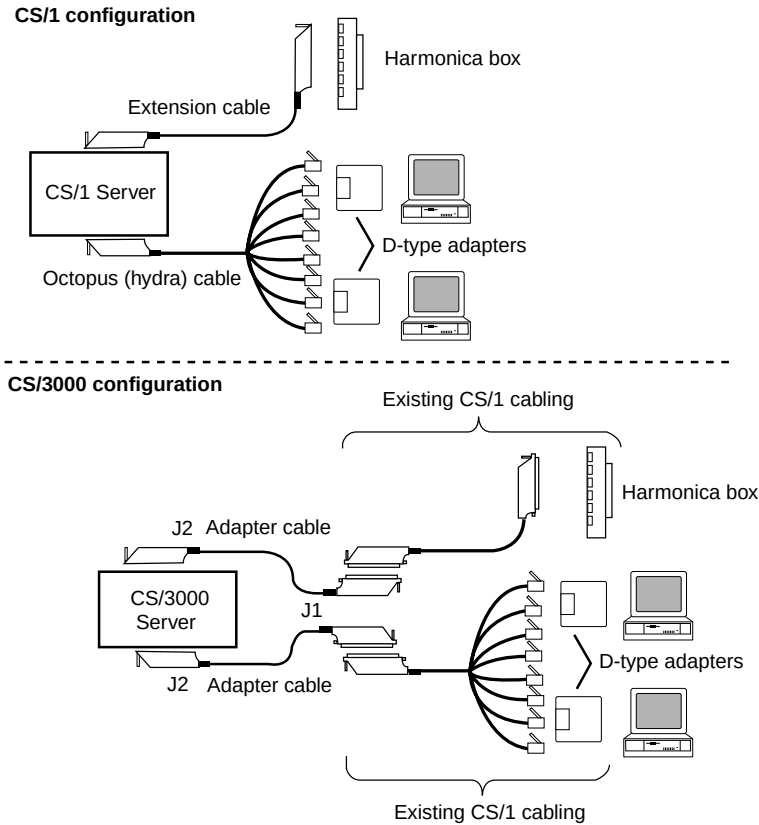


Figure A-6 Replacing a CS/1 Server with a CS/3000 Series Server

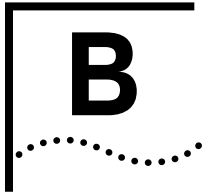
You can buy the following adapter cable directly from 3Com or your network supplier:

- 2-ft (0.6-m) CS/1 to CS/3000 conversion cable, 3Com part number 3C6100

The conversion cable terminates in two 50-pin male connectors, J1 and J2. Connect J2 to the CS/3000 series server and J1 to the existing CS/1 cabling, as shown in Figure A-6. Table A-15 shows pin assignments of these two connectors.

Table A-15 Conversion Cable Connector Pin Assignments

J1 Pin	J2 Pin	J1 Signal	J1 Pin	J2 Pin	J1 Signal
3	1	DCD0	26	27	RXD0
1, 2	2	SG0	27	26	TXD0
—	3	Not used	28	28	DTR0
6	4	DCD1	29	30	RXD1
4, 5	5	SG1	30	29	TXD1
—	6	Not used	31	31	DTR1
9	7	DCD2	32	33	RXD2
7, 8	8	SG2	33	32	TXD2
—	9	Not used	34	34	DTR2
12	10	DCD3	35	36	RXD3
10, 11	11	SG3	36	35	TXD3
—	12	Not used	37	37	DTR3
15	13	DCD4	38	39	RXD4
13, 14	14	SG4	39	38	TXD4
—	15	Not used	40	40	DTR4
18	16	DCD5	41	42	RXD5
16, 17	17	SG5	42	41	TXD5
—	18	Not used	43	43	DTR5
21	19	DCD6	44	45	RXD6
19, 20	20	SG6	45	44	TXD6
—	21	Not used	46	46	DTR6
24	22	DCD7	47	48	RXD7
22, 23	23	SG7	48	47	TXD7
—	24	Not used	49	49	DTR7
—	25	Not used		50	Not used



STARTUP MESSAGES

At power-on or reset, the server performs self-tests and diagnostics on the motherboard, auxiliary processor board, and 16-port asynchronous modules. It sends status and error messages generated by these tests to an attached console, if possible. This appendix lists these messages by type:

- Normal messages
- Motherboard error messages
- Auxiliary processor board error messages
- 16-port asynchronous module error message

Within each type, the messages are listed in alphabetical order.



The server may not always be able to report a failure on the console (for example, CPU failure).

If you receive an error message, refer to Chapter 6, “Troubleshooting.” If you still receive an error message, contact 3Com or your network supplier. Refer to Appendix D, “Technical Support,” for technical support information.

Normal Messages

The following messages indicate normal startup.

128K ram installed

Meaning: Indicates the size of memory on the auxiliary processor board.

3Com Corporation CS/3000 Series Monitor

Meaning: The server is in monitor mode. For information on monitor mode, refer to Appendix C, “Monitor Utility.”

Auxiliary Processor Board diagnostics - Passed

Meaning: The auxiliary processor board has passed its self-tests.

Auxiliary Processor Board - Installed.

Meaning: The server has detected the presence of the auxiliary processor board and started self-tests on it.

Booting complete

Meaning: The boot sequence is complete.

Booting from <source>

Meaning: The server is booting from the source specified by the Initial Boot Source parameter. <source> indicates either floppy or network. For information on this parameter, refer to "Initial Boot Source".

CPU - 4 Megs Private RAM, 2 Megs Shared RAM - Passed N4 MMON rev. <xxx>

Meaning: No errors were encountered in CPU self-tests. The server's firmware revision is <xxx>.

CS/3000 Series Power-up

Meaning: The motherboard's CPU self-tests have begun.

Diagnostic Upload - Completed

Meaning: The auxiliary processor board's diagnostics have been copied to RAM and self-tests are ready to begin.

Do you want to enter monitor (Y/N)?

Meaning: The server cannot find the boot source specified by the Initial Boot Source parameter. For information on this parameter, refer to "Initial Boot Source".

Action: Enter **Y** to enter the monitor utility and boot manually. Enter **N** to retry the original boot source.

Ethernet Controller - Passed Station Address - 080002<xxxxxx>

Meaning: No errors were encountered in Ethernet controller tests. The server's Ethernet address is 080002<xxxxxx>.

Floppy disk drive not installed!

Meaning: This message appears during startup of Model CS/3000 (without a diskette drive). It does not appear during startup of Model CS/3100 (with a diskette drive).

Network timed out

Meaning: The server tried to boot from an RBCS or TFTP server, but did not receive a response.

Skipping memory tests!

Meaning: This message appears when the Memory Test Bypass firmware parameter is set to Enable. For information on this parameter, refer to "Memory Test Bypass".

For example, if the firmware's Initial Boot Source parameter is set to Network and the Memory Test Bypass parameter is set to Disable on a Model CS/3000, messages similar to the following appear on the console:

```
CS/3000 Series Power-up
CPU - 4 Megs Private RAM, 2 Megs Shared RAM,
Floppy disk drive not installed! - Passed N4 MMON rev. 003
```

```
Ethernet Controller - Passed Station Address - 080002089BB5
Auxiliary Processor Board - Installed
128K ram installed
Diagnostic Upload - Completed
Aux. Processor Board diagnostics - Passed
Booting from Network
```

Motherboard Error Messages

The following error messages indicate that the motherboard has failed a self-test.

Shared Memory <test name> - Failed

Address <xxxxxxx>, Expected <yyyy>, Read <zzzz>

Meaning: <test name> identifies the shared memory test that failed, address or data. <xxxxxxx> is the hexadecimal address at which the failure occurred. <yyyy> is the hexadecimal data written to the location. <zzzz> is the hexadecimal data read back.

For example, the error message

```
Shared Memory Data Test - Failed
Address 0x4000010, Expected 0x0100, Read 0xFFFF
```

means that the data test for the motherboard's shared memory failed at address 0x4000010. The data expected was 0x0100. The actual data was 0xFFFF.

<Type> - Failed <test name> <test number> [<x>] [<y>] [<z>]

Meaning: <Type> identifies the motherboard test type being executed at the time of failure: CPU, SIO (serial input/output), or EC (Ethernet controller). <test name> identifies the test that failed, while <test number> gives the test number. Motherboard test numbers include a decimal point followed by two zeros. The optional numerical values <x>, <y>, and <z> help identify the location of the error.

For example, the error message

```
CPU - Failed PARITY TEST 06.00
```

means that the CPU parity test, number 06.00, failed.

<Type> <test name> Failed: was <aaaaaaaa>, expected <eeeeeeee>, at Address <xxxxxxx>

Meaning: <Type> identifies the motherboard memory test type being executed at the time of failure, PRVT (private) or (SHRD) shared. <test name> identifies the test that failed. <aaaaaaaa> is the hexadecimal data pattern returned from the memory location being tested; <eeeeeeee> is the expected hexadecimal data pattern; and <xxxxxxx> is the hexadecimal address being tested.

For example, the error message

```
PRVT Data Bus Ripple Failed: was 0x1000ff, expected
0x100000, at Address 0x10ff00
```

means that the data bus ripple test for private memory failed at address 0x10ff00. The data that was expected was 0x100000. The actual data was 0x1000ff.

Auxiliary Processor Board Error Messages

The following error messages indicate that the auxiliary processor board has failed a self-test.

Channel Attention from Aux Processor Board Inoperative

Meaning: The channel attention interrupt from the auxiliary processor board is inoperative.

Channel Attention to Aux Processor Board Inoperative

Meaning: The channel attention interrupt to the auxiliary processor board is inoperative.

Checksum Test - Failed**Aux Processor Board Unable to Report Status**

Meaning: The checksum test of the auxiliary processor board's RAM failed. The test may have become corrupted during the diagnostics upload process.

Checksum Test - Failed**Bad Checksum Calculated**

Meaning: The checksum test of the auxiliary processor board's RAM failed. The test may have become corrupted during the diagnostics upload process.

Control Register Test - Failed**Expected <xxxx> Read <yyyy>**

Meaning: The control register test failed. <xxxx> is the hexadecimal data that was written to the register. <yyyy> is the hexadecimal data that was read back.

NMI Test - Failed

Meaning: The auxiliary processor board's nonmaskable interrupt (NMI) did not occur.

Ram <test name> - Failed**Address xxxxxxxx, Expected yyyy, Read zzzz**

Meaning: <test name> identifies the auxiliary processor board memory test that failed: address, data, or A-5-A. <xxxxxxx> is the hexadecimal address at which the failure occurred. <yyyy> is the hexadecimal data written to the location. <zzzz> is the hexadecimal data read back.

For example, the error message

Ram Data Test -- Failed

Address 0x4000010, Expected 0x0100, Read 0xFFFF

mean that the data test for RAM failed at address 0x4000010. The data that was expected was 0x0100. The actual data was 0xFFFF.

Startup Test on Auxiliary Processor Board Failed

Meaning: The auxiliary processor board failed startup tests administered by communications server software.

Status Register - Failed

Channel Attention Interrupt Bit Not Set

Meaning: The status register's channel attention interrupt bit is not set.

Status Register - Failed

NMI Bit Not Set

Meaning: The status register's NMI bit is not set.

Status Register - Failed

TIC Interrupt Bit Not Set

Meaning: The status register's TIC interrupt bit is not set.

TIC Interrupt Test - Failed

Meaning: The TIC interrupt did not occur.

Timer <x> Test - Failed

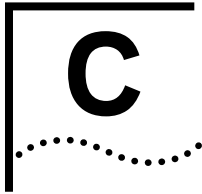
Meaning: One of the 8254 timer's counters (1 or 2) failed its test.

16-Port Asynchronous Module Error Message

The following error message indicates that a 16-port asynchronous module has failed a self-test.

Startup Test Failed on 16-port Asynchronous Module in Slot <x>

Meaning: The 16-port asynchronous module in slot <x> failed a startup test. Slot 1 is the slot closest to the power supply; slot 2 is the middle slot; slot 3 is the slot farthest from the power supply.



MONITOR UTILITY

This appendix describes how to access and use the monitor utility, which consists of commands and parameters that reside in the motherboard's firmware. Monitor mode suspends normal operation and allows interaction only with the monitor command interface. Using this utility, you can perform the following tasks:

- Boot or reset the server
- Copy and format diskettes
- List and delete files on a diskette
- Dump the contents of the server's memory to diskettes or the network
- Display current settings of firmware parameters
- Modify firmware parameters to customize the operation of your server

Procedures for displaying and modifying firmware parameters appear in greater detail in Chapter 4, "Configuration."

After using the monitor, you must reboot the communications server to resume normal operation.

Entering the Monitor

To access the monitor utility, you must attach a terminal to the console port, located on the CS/3000 series server's back panel. Configure the terminal to 9600 bps, 8 data bits, 1 stop bit, and no parity.



These instructions assume the default firmware configuration. If you have used firmware configuration commands to change the baud rate, configure the terminal accordingly.

You can access the monitor in any of the following ways:

- Turn on server power without a boot source.

- Configure firmware to access the monitor during these circumstances:
 - At startup
 - If the server becomes nonfunctional
- Use the hardware interrupt switch if the server becomes nonfunctional.
- If you have Network Manager privilege, enter **MONitor** .

These methods are described in the following sections.

Once you access the monitor utility, you are in monitor mode, indicated by the angle bracket prompt (>).

Powering on without a Boot Source

To access the monitor utility by powering on the server without a boot source, follow these steps:

- 1 Make sure that there is no diskette in the disk drive (Model CS/3100 only) and that the server cannot use a network boot source (an RBCS or TFTP/FTP server).

If a diskette is in the disk drive, remove it. If the communications server is configured to use a network boot source, disconnect it from the network, or make sure that it is not listed in the boot database of an RBCS or TFTP/FTP server. To determine whether the server is in the boot database of an RBCS server, refer to the *Remote Boot and Configuration Services User's Guide*.

- 2 Turn the unit power on, if it is already on, press the reset switch on the front panel to reboot.

The server tries to boot. (The booting process takes a few minutes.) Because the boot source is not present, it displays the following message:

Do you want to enter monitor (Y/N)?

- 3 Type **Y** at the prompt.

The following message appears:

```
3Com Corporation CS/3000 Series Monitor  
>
```

You are now in monitor mode.

Configuring Firmware to Access the Monitor

You can configure firmware parameters to allow you to automatically access the monitor at startup or if the server becomes nonfunctional.

At Startup

To configure firmware to access the monitor at startup:

- 1 Set the Initial Boot Source parameter to “Monitor.”

For instructions on how to modify firmware parameters, refer to “Changing the Configuration”.

- 2 Reset the server by pressing the reset switch on the front panel.

Because the boot source has been set to Monitor, the server enters the monitor utility and displays the following message:

```
3Com Corporation CS/3000 Series Monitor
>
```

If the Server Becomes Nonfunctional

To configure firmware to access the monitor if the server becomes nonfunctional:

- 1 Set the Auto-reboot parameter to “Boot monitor.”

For instructions on how to modify firmware parameters, refer to “Changing the Configuration”.

- 2 Reset the server by pressing the reset switch on the front panel.

The server performs the self-tests and boot process determined by the Continuous Self-Test and Initial Boot Source parameters.

If an error occurs while the server is running its software, the server automatically accesses the monitor. At this point, 3Com or your network supplier may ask you to perform a memory dump. For information on memory dumps, refer to “Memory Dump Procedures”.

Using the Hardware Interrupt Switch

Use this method of accessing the monitor only if the server becomes nonfunctional.



CAUTION: Do not press the hardware interrupt switch in the next step while the Self Test LED is on. Doing so can corrupt memory or firmware configurations. This LED can take up to three minutes to go out.

Using a nonconductive object such as a plastic stylus, press the hardware interrupt switch. The hardware interrupt switch is located on the server's left side (viewed from the front of the server) close to the front, as shown in Figure 1-1 on page 1-3. The switch is recessed behind a small round hole to protect it from being pressed unintentionally.



WARNING: *Use only a nonconductive object such as a plastic stylus to press the hardware interrupt switch. Do not use the tip of a pencil. Graphite particles can cause electrical shock to the operator and can damage components on the server's circuit boards.*

The following message appears:

```
3Com Corporation CS/3000 Series Monitor  
>
```

If the server is nonfunctional, enter the following command:

```
k
```

Entering this command performs a soft reset, which resets the monitor's stack and internal variables and the Ethernet and serial controllers. At this point, 3Com or your network supplier may ask you to perform a memory dump. For information on memory dumps, refer to "Memory Dump Procedures".

Using the MONitor Command

If you have Network Manager privilege, you can access the monitor by entering the MONitor software command from the local console. To resume normal software operation, enter **go** at the monitor prompt (>). If you have used monitor commands that interact with memory, such as **co** or **du**, do not use **go**. Instead reset the communications server by using the **rs** command or the front-panel reset switch.

Using Commands

While in monitor mode you can boot or reset the server and perform diagnostic tasks and other functions by entering commands.

You must be in monitor mode to use these commands. When you are finished, reset the server by pressing the reset switch on the front panel.

Command
Descriptions

Table 6-1 summarizes monitor mode commands. You can enter commands in either upper- or lowercase at the angle bracket prompt. Detailed descriptions of the commands follow the table.

Table 6-1 Firmware Commands

Command	Function
BS	Boots from the source specified in the Network Boot String parameter.
BT	Boots from a specified source, overriding the source specified in Initial Boot Source parameter.
CO*	Copies the contents of one diskette inserted in the disk drive to another diskette.
DE*	Deletes the specified file from the diskette.
DF*	Displays files on the diskette.
DU*	Dumps the server's memory to a set of diskettes.
FC	Enters the Firmware Configuration Utility Commands menu.
FO*	Formats a diskette.
H or ?	Displays a list of commands and their syntax.
K	Performs a soft reset of the server.
RS	Resets the server.
SW	Toggles between user command help menu and diagnostic command help menu.
UP	Uploads memory to the hard disk of an RBCS or TFTP server on the network.
!	Repeats the last command.

* Model CS/3100 only.

BS

Syntax

BS

Description

Boots the server from the source specified in the Network Boot String parameter. To reconfigure this parameter, refer to "Network Boot String".

BT

Syntax

BT
BT <filenumber>
BT <filename> <address>

Description

Boots the server from a specified source, overriding the Initial Boot Source parameter.

The <filename> parameter specifies a bootfile on the diskette (Model CS/3100 only). Valid entries are 0 through 9. For example, enter **bt 2** to boot from file 2 on the diskette.

The <filename> and <address> parameters specify the name of the bootfile and the location in memory where it should be loaded. For example, enter **bt _cs30 0x4000010** to load and run the file _cs30 from memory location 0x4000010.

If you do not specify a parameter, the server attempts to boot from file 0 on the diskette.

CO

<i>Syntax</i>	CO
<i>Description</i>	Copies the contents of a diskette to one or more diskettes (Model CS/3100 only). For a description of the procedure, refer to “Copying and Formatting Diskettes”.

DE

<i>Syntax</i>	DE <filename>
<i>Description</i>	Deletes the specified file from the diskette (Model CS/3100 only). Valid entries are 0 through 9. For example, enter de 2 to delete file 2 from the diskette.

DF

<i>Syntax</i>	DF
<i>Description</i>	Lists files on the diskette (Model CS/3100 only), including start and end blocks, length of the file, and starting address.

DU

<i>Syntax</i>	DU
<i>Description</i>	Dumps the server’s memory to a set of diskettes (Model CS/3100 only). For information about memory dumps, refer to “Memory Dump Procedures”.

FC

Syntax FC

Description Enters the Firmware Configuration Utility menu. For information on using this menu, refer to Chapter 4, “Configuration.”

FO

Syntax FO

Description Formats a diskette (Model CS/3100 only). For a description of the procedure, refer to “Formatting Diskettes without the Copy Command”.

H or ?

Syntax H
?

Description Displays a list of commands and their syntax. Commands in the list that are not documented in this guide are for 3Com internal use only.

K

Syntax K

Description Resets the monitor's stack and internal variables (called a soft reset). It also resets the Ethernet and serial controllers.

RS

Syntax RS

Description Resets the server; has the same effect as pressing the reset switch or powering the server off and on. During reset, the server performs the self-tests and boot process determined by the Continuous Self-Test and Initial Boot Source parameters.

SW

SyntaxSW

DescriptionToggles the menu that appears when you enter **H** or **?**. The default is the user commands menu, containing the commands documented in this guide. Entering **SW** switches to the diagnostic commands menu, which lists all available commands. The undocumented commands in the diagnostic menu are for 3Com internal use only.

UP

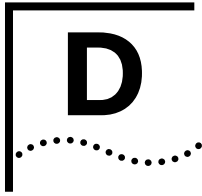
SyntaxUP

DescriptionDumps the server's memory to the hard disk of an RBCS or TFTP/FTP server on the network, as specified in the Network Boot String parameter.

!

Syntax!

DescriptionRepeats the previous command.



TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Online Technical Services

3Com offers worldwide product support seven days a week, 24 hours a day, through the following online systems:

- 3Com Bulletin Board Service (3ComBBS)
- World Wide Web site
- 3ComForum on CompuServe®
- 3ComFactsSM automated fax service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available via modem or ISDN seven days a week, 24 hours a day.

Access by Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	(61) (2) 9955 2073
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 9600 bps	(49) (89) 627 32 188 (49) (89) 627 32 189
Hong Kong	up to 14400 bps	(852) 2537 5608
Italy (fee required)	up to 14400 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5840
U.K.	up to 28800 bps	(44) (1442) 278278
U.S.	up to 28800 bps	(1) (408) 980 8204

Access by ISDN

ISDN users can dial-in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, dial the following number:

(408) 654 2703

World Wide Web Site

Access the latest networking information on 3Com's World Wide Web site by entering our URL into your Internet browser:

`http://www.3Com.com/`

This service features news and information about 3Com products, customer service and support, 3Com's latest news releases, selected articles from 3TECH™ (3Com's award-winning technical journal) and more.

3ComForum on CompuServe

3ComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

- 1** Log on to CompuServe.
- 2** Enter **go threecom**.
- 3** Press [Return] to see the 3ComForum main menu.

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, seven days a week.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Telephone Number
Hong Kong	(852) 2537 5610
U.K.	(44) (1442) 278279
U.S.	(1) (408) 727 7021

Local access numbers are available within the following countries:

Country	Telephone Number	Country	Telephone Number
Australia	800 123853	Netherlands	06 0228049
Belgium	0800 71279	Norway	800 11062
Denmark	800 17319	Portugal	0505 442607
Finland	98 001 4444	Russia (Moscow only)	956 0815
France	05 90 81 58	Spain	900 964445
Germany	0130 8180 63	Sweden	020 792954
Italy	1678 99085	U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

In the U.S. and Canada, call **(800) 876-3266** for customer service.

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number	Country	Telephone Number
Australia (Sydney)	(61) (2) 9937 5000	Japan	(81) (3) 3345 7251
(Melbourne)	(61) (3) 9653 9515	Mexico	(525) 531 0591
Belgium*	0800 71429	Netherlands*	06 0227788

(continued)

Country	Telephone Number
Brazil	(55) (11) 546 0869
Canada	(905) 882 9964
Denmark*	800 17309
Finland*	0800 113153
France*	05 917959
Germany*	0130 821502
Hong Kong	(852) 2501 1111
Ireland*	1 800 553117
Italy*	1678 79489

Country	Telephone Number
Norway*	800 13376
Singapore	(65) 538 9368
South Africa	(27) (11) 803 7404
Spain*	900 983125
Sweden*	020 795482
Taiwan	(886) (2) 577 4352
United Arab Emirates	(971) (4) 349049
U.K.*	0800 966197
U.S.	(1) (408) 492 1790

* These numbers are toll-free.

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	31 30 60 29900, option 5	(44) (1442) 275822
Outside Europe, U.S., and Canada	(1) (408) 492 1790	(1) (408) 764 7290

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